UNIVERSITY OF ALBERTA LIBRARY
0 1620 1134 9105

1994–95 School Year

Annual Report

Diploma Examinations Program

Students First! Evaluation

Alberta
EDUCATION

EDUC
LB
3054
C2
D7322
1994/
1995

EX LIBRIS
UNIVERSITATIS
ALBERTENSIS

1994–95 School Year

Annual Report

Diploma Examinations Program

Students First!
Student Evaluation

Alberta
EDUCATION

Alberta Education Cataloguing in Publication Data

ISSN 1185-2364

This document was written primarily for:

Students	
Teachers	✓
Administrators	✓
Parents	
General Public	
Others (Specify)	Researchers

Distribution: Superintendents of Schools • School Principals and Teachers • The Alberta Teachers' Association • Alberta School Boards Association • Alberta Education • General Public upon Request.

Copyright 1996, the Crown in Right of Alberta, as represented by the Minister of Education, Alberta Education, Student Evaluation Branch, 11160 Jasper Avenue, Edmonton, Alberta T5K 0L2. All rights reserved. Additional copies may be obtained from the Student Evaluation Branch, 403-427-0010.

UNIVERSITY LIBRARY
UNIVERSITY OF ALBERTA

Table of Contents

Message from the Director ix

Section 1 *Grade 12 Diploma Examinations Program* 1

Section 2 *Summary of Results* 2

Section 3 *Results by Gender* 8

Section 4 *Results for Population Subgroups* 12

Section 5 *Special Study: Grade 12 Enrollment Decline—A Preliminary Assessment* 21

Section 6 *Achievement-Over-Time Studies* 31

Section 7 *Examiners' Annual Summary Statements*

English 30 34
English 33 36
Social Studies 30 39
Français 30 41
Mathematics 30 42
Biology 30 43
Chemistry 30 45
Physics 30 48

Appendix A *Diploma Examination Development Process* 51

Appendix B *Guidelines for Interpreting and Using the Results of the Diploma Examinations* 55

Appendix C *Percentage Distribution of Marks in Diploma Examination Courses* 57

List of Figures

Section 2

Figure 2-1 Percentage of Students Achieving Standards (Final Course Mark), 1994–95 School Year 2

Figure 2-2 Number of Students Writing Diploma Examinations in Each Course 1992–93, 1993–94, and 1994–95 School Years 3

Figure 2-3 Average Number of Different Diploma Examinations Written by Students in Each Course, 1994–95 School Year 4

Figure 2-4 English 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 4

Figure 2-5 English 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 4

Figure 2-6 English 33 Distribution of A, B, C, and F for Final Course Mark, Three School Years 5

Figure 2-7 English 33 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 5

Figure 2-8 Social Studies 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years ... 5

Figure 2-9 Social Studies 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 5

Figure 2-10 Français 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 5

Figure 2-11 Français 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 5

Figure 2-12 Mathematics 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 6

Figure 2-13 Mathematics 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 6

Figure 2-14 Biology 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 6

Figure 2-15 Biology 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 6

Figure 2-16 Chemistry 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 6

Figure 2-17 Chemistry 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 6

Figure 2-18 Physics 30 Distribution of A, B, C, and F for Final Course Mark, Three School Years 7

Figure 2-19 Physics 30 Distribution of A, B, C, and F for School, Examination, and Final Course Marks, 1994–95 School Year 7

Section 3

Figure 3-1 Ratio of Males to Females Writing Diploma Examinations, 1994–95 School Year 8

Figure 3-2 Percentage of Students Achieving Standards, by Gender (Final Course Mark), 1994–95 School Year 9

Section 5

Figure 5-1 Grade 12 Enrollments, Alberta, 1984–85 to 1994–95 School Years 22

Figure 5-2 Percentage of Change in Grade 12 Enrollments, Alberta and Select Provinces, 1993–94 to 1994–95 School Years 23

Figure 5-3 Percentage of Change in Grade 12 Enrollment by Age, Alberta, 1993–94 to 1994–95 School Years 24

Figure 5-4 Grade 12 Enrollments as a Proportion of the Population Aged 16 to 18, Alberta, 1986–87 to 1994–95 School Years 25

Figure 5-5 Students Writing Diploma Examinations by Course, Alberta, 1992–93 to 1994–95 School Years 26

Figure 5-6 Students Who Completed Diploma Examination Courses by Type of Student, Alberta, 1992–93 to 1994–95 School Years 27

Figure 5-7 Seasonally Adjusted Employment, Alberta, January 1992 to July 1995 30

Section 6

Figure 6-1 Achievement Over Time on Diploma Examinations 33

Section 7

Figure 7-1 English 30 Distribution of Diploma Examination Marks, 1994–95 School Year 34

Figure 7-2 English 33 Distribution of Diploma Examination Marks, 1994–95 School Year 37

Figure 7-3 Social Studies 30 Distribution of Diploma Examination Marks, 1994–95 School Year 39

Figure 7-4 Mathematics 30 Distribution of Diploma Examination Marks, 1994–95 School Year 42

Figure 7-5 Biology 30 Distribution of Diploma Examination Marks, 1994–95 School Year 43

Figure 7-6 Chemistry 30 Distribution of Diploma Examination Marks, 1994–95 School Year 46

Figure 7-7 Physics 30 Distribution of Diploma Examination Marks, 1994–95 School Year 48

List of Tables

Section 2

Table 2-1 Correlation of Diploma Examination Marks and School-Awarded Marks by Course, 1994–95 School Year 7

Section 3

Table 3-1 Number of Students Achieving Standards, by Gender (Final Course Mark), 1994–95 School Year 9

Table 3-2 Provincial Percentage Distribution of A, B, C, and F, Average, and Standard Deviation of Scores, 1994–95 School Year 10

Section 4

Table 4-1 English 30 Status of Students Writing 13

Table 4-2 English 30 Diploma Examination Marks for Population Subgroups 13

Table 4-3 English 30 School-Awarded Marks for Population Subgroups 13

Table 4-4 English 33 Status of Students Writing 14

Table 4-5 English 33 Diploma Examination Marks for Population Subgroups 14

Table 4-6 English 33 School-Awarded Marks for Population Subgroups 14

Table 4-7 Social Studies 30 Status of Students Writing 15

Table 4-8 Social Studies 30 Diploma Examination Marks for Population Subgroups 15

Table 4-9 Social Studies 30 School-Awarded Marks for Population Subgroups 15

Table 4-10 Mathematics 30 Status of Students Writing 16

Table 4-11 Mathematics 30 Diploma Examination Marks for Population Subgroups 16

Table 4-12 Mathematics 30 School-Awarded Marks for Population Subgroups 16

Table 4-13 Biology 30 Status of Students Writing 17

Table 4-14 Biology 30 Diploma Examination Marks for Population Subgroups 17

Table 4-15 Biology 30 School-Awarded Marks for Population Subgroups 17

Table 4-16 Chemistry 30 Status of Students Writing 18

Table 4-17 Chemistry 30 Diploma Examination Marks for Population Subgroups 18

Table 4-18 Chemistry 30 School-Awarded Marks for Population Subgroups 18

Table 4-19 Physics 30 Status of Students Writing 19

Table 4-20 Physics 30 Diploma Examination Marks for Population Subgroups 19

Table 4-21 Physics 30 School-Awarded Marks for Population Subgroups 19

Section 5

Table 5-1 Grade 12 Enrollments, Alberta, 1984–85 to 1994–95 School Years 22

Table 5-2 Grade 12 Enrollments, Alberta and Select Provinces, 1993–94 to 1994–95 School Years 23

Table 5-3 Grade 12 Enrollments by Age, Alberta, 1992–93 to 1994–95 School Years 24

Table 5-4 Population Aged 16 to 18 as Compared to Grade 12 Enrollment, Alberta, 1986–87 to 1994–95 School Years 25

Table 5-5 Students Writing Diploma Examinations by Course, Alberta, 1992–93 to 1994–95 School Years 26

Table 5-6 Students Who Completed Diploma Examination Courses by Type of Student Alberta, 1992–93 to 1994–95 School Years 27

Table 5-7 Full-Time Equivalent (FTE) Enrollment in Post-Secondary Institutes, Alberta, 1990–91 to 1994–95 School Years 28

Table 5-8 Fall Full-Time Enrollment, Vocational Colleges, Alberta, 1990–91 to 1994–95 School Years 28

Table 5-9 Seasonally Adjusted Employment (000s), Alberta, January 1992 to June 1995 29

Table 5-10 The Relative Employability of Students Completing Grade 12 Diploma Examination Courses 29

Section 6

Table 6-1 Number of Students Writing the Anchor Tests 31

Table 6-2 Equated Average Percentage on the Machine-Scored Component of the Diploma Examinations 32

Section 7

Table 7-1 English 30 Diploma Examination Five-Year Comparison by Population Percentage and Achievement Averages 35

Table 7-2 English 30 Five-Year Comparison of Selected Population and Achievement Indicators 35

Table 7-3 English 33 Diploma Examination Five-Year Comparison by Population Percentage and Achievement Averages 38

Table 7-4 English 33 Five-Year Comparison of Selected Population and Achievement Indicators 38

Table 7-5 Social Studies 30 Diploma Examination Five-Year Comparison by Population Percentage and Achievement Averages 40

Table 7-6 Social Studies 30 Five-Year Comparison of Selected Population and Achievement Indicators 40

Table 7-7 Biology 30 Diploma Examination Five-Year Comparison by Population Percentage and Achievement Averages 44

Table 7-8 Biology 30 Five-Year Comparison of Selected Population and Achievement Indicators 45

Table 7-9 Chemistry 30 Five-Year Comparison of Selected Population and Achievement Indicators 46

Table 7-10 Chemistry 30 Diploma Examination Five-Year Comparison by Population Percentage and Achievement Averages 47

Table 7-11 Physics 30 Five-Year Comparison of Selected Population and Achievement Indicators 49

Message from the Director

Many teachers worked with us during the 1994–95 school year, assisting in exam development, field testing, marking, and the administration of the diploma exams. Superintendents, high school principals, and other school personnel have also helped make the Diploma Examinations Program effective. I appreciate their commitment, and I want to thank them for the support and assistance they have provided.

Our annual report combines the January, June, and August results for diploma exam courses. The graphs, tables, and text describe student performance for the whole school year. As before, we present data for three consecutive years for each diploma exam course. Some other features of the previous report are repeated, including the separate presentation of school marks, exam marks, and final marks for each course, and results by gender.

I hope that you will find this report useful, and I welcome your comments and questions. Please feel free to call or write to me, or contact any of the Student Evaluation staff. We are committed to communicating the achievement results of our graduating students clearly and encourage schools to share the results for their students with parents and others in the community.

To reach a broader group of Albertans, this Annual Report is being distributed electronically (via Alberta Education's Home Page at http://ednet.edc.gov.ab.ca) for the first time.

We welcome your reaction to this method of distribution.

FHorvath

Frank G. Horvath, Director

Section 1
Grade 12 Diploma Examinations Program

Diploma examinations are administered in January, June, and August of each school year.

The Grade 12 Diploma Examinations Program, established in 1984, has three main purposes:

- to **certify** the level of individual student achievement in selected Grade 12 courses
- to **ensure** that province-wide **standards** of achievement are maintained
- to **report** individual and group results

The examination development process, described in Appendix A, ensures that this form of assessment provides valid and reliable results. Eight Grade 12 courses have diploma examinations, and five of these* are available in French translation:

- English 30
- English 33
- Social Studies 30*
- Français 30
- Mathematics 30*
- Biology 30*
- Chemistry 30*
- Physics 30*

This *Diploma Examinations Program Annual Report* provides province-wide results for the entire school year; that is, for the January, June, and August examinations combined. Additionally, the annual report provides summaries of results by gender, for population subgroups, and for achievement-over-time studies.

Occasional research findings on issues of topical interest related to the program are also featured. In this 1994–95 report, a preliminary assessment of the decline in Grade 12 enrollment is included.

Certification

A student's final mark in a diploma examination course is a fifty-fifty "blend" of the examination mark and the school-awarded mark (except for students with mature status; see Section 4). For example, a diploma examination mark of 57% combined with a school-awarded mark of 45% would produce a **final course mark of 51%**, a "pass" in the course. This student would earn high school graduation credits for the course. The "blending" of the two marks to produce a final course mark recognizes the fact that the diploma examination assesses only those learning outcomes, listed in the *Program of Studies,* that can be effectively measured in a limited time using paper and pencil tests. The school can best assess students' achievement in the laboratory, in research, in oral communication, and in cooperative learning.

Standards

The *Program of Studies* for each diploma examination course outlines what students are expected to know and to be able to do in order to pass the course. Information bulletins published at the beginning of the school year provide details about "how well" students are expected to do; i.e., the bulletins outline the assessment standards for each diploma examination course. Students who achieve the *acceptable standard* of performance receive a final course mark of 50% or higher. Students who achieve the *standard of excellence* receive a final course mark of 80% or higher.

Reporting

The results achieved by students in the Diploma Examinations Program are aggregated at the school, jurisdiction, and provincial levels and are presented in this and the three reports described below. The purpose of the Diploma Examination Program is to help school administrators, teachers, trustees, and Alberta Education evaluate the effectiveness of educational programs. Guidelines for interpreting and using these reports are given in Appendix B.

These reports should not be used as the basis for evaluating teacher performance or for comparing performance between schools or jurisdictions.

Percentage Distribution of Marks in Diploma Examination Courses is a three-page report distributed to educators in schools, jurisdictions, and other educational institutions approximately three weeks after the January and June examinations are written. The report is also available to the public on request. The reports issued in 1995 are reproduced in Appendix C.

School and Jurisdiction Reports for each diploma examination course are distributed to superintendents and principals soon after the January and June administrations. These reports provide results at the question and sub-test level for each school and jurisdiction. This information is particularly useful in assessing the strengths and weaknesses of local programs. These reports are available to the public through the superintendent or principal, according to local board policy.

Examiners' Reports for each course, which are distributed after the January and June writings, are intended primarily for teachers. Provincial results are provided in relation to course standards as reflected in the examination blueprints and information bulletins. The January and June 1995 *Examiners' Reports* are available on request.

Section 2

Summary of Results

This section provides the overall results and describes certain broad characteristics of the students who wrote the diploma examinations.

The following questions will be answered:

- What percentage of students achieved the *acceptable standard* or the *standard of excellence* according to criteria set by Alberta Education?
- How many students wrote each diploma examination and how do these numbers compare with the previous two years?
- What was the average number of different diploma examinations written by each student in each course during the 1994–95 school year?
- What was the distribution of A, B, C, and F for each diploma examination course and how does this distribution compare with distributions of previous years?
- For each diploma examination course, what is the correlation between examination marks and school-awarded marks?

What percentage of students achieved the *acceptable standard* or the *standard of excellence* according to criteria set by Alberta Education?

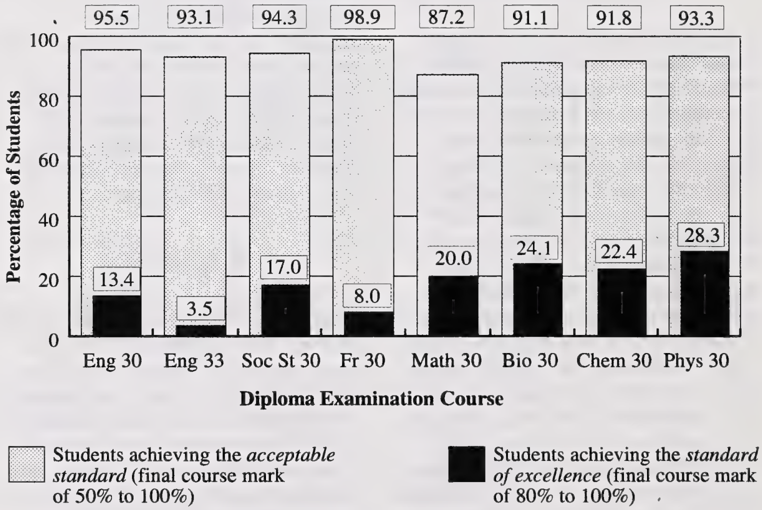
Figure 2-1 shows the percentage of students achieving the *acceptable standard* and the *standard of excellence* based on the final course mark. The "final course mark" is the average of the school-awarded mark and the diploma examination mark or as otherwise provided by Alberta Education policy.

During the 1994–95 school year, final course marks showed that in all courses except Mathematics 30 more than 90% of students achieved the *acceptable standard.* A high percentage of students also achieved the *standard of excellence* in the sciences.

In Alberta, courses are selected by students according to their own needs, aspirations, and expectations. This may account for much of the differential achievement among courses. For this reason, local targets for the percentage of students expected to achieve the *acceptable standard* or the *standard of excellence* are best set in the context of local policies and conditions.

Figure 2-1

Percentage of Students Achieving Standards (Final Course Mark)
1994–95 School Year



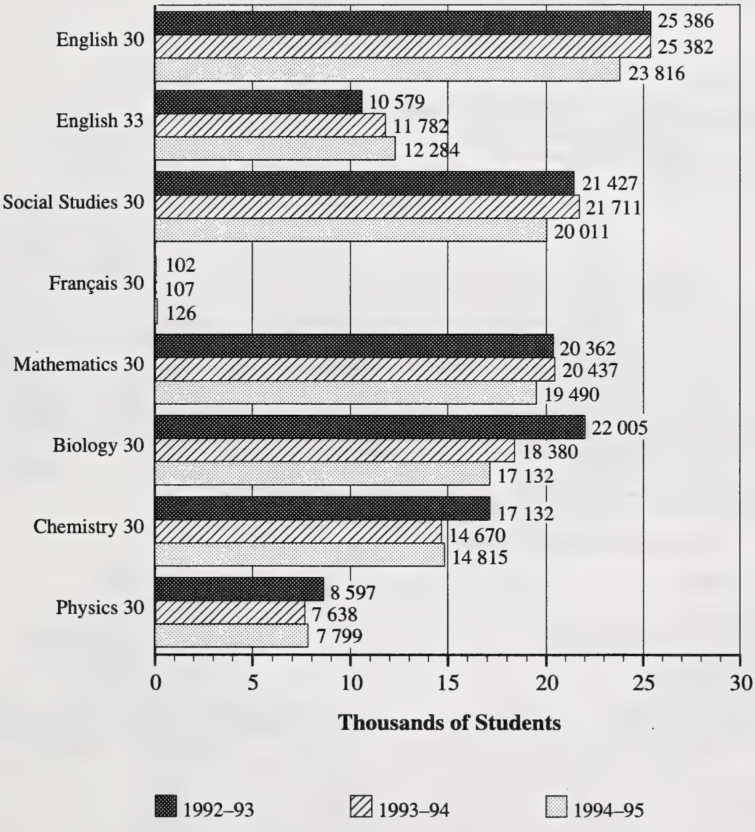
How many students wrote each diploma examination and how do these numbers compare with the previous two years?

As shown in Figure 2-2, the number of students writing diploma examinations declined in 1994–95, compared with the previous two years. This trend was evident in most courses. See Section 5 for a special study on declining Grade 12 enrollments.

Note: All students who wrote more than one diploma examination in a course during a single year are counted only once. Students who wrote examinations in the same course in different years are counted once in each year they wrote. Students from the Northwest Territories are not included in these counts. Because Figure 2-2 includes students who were not given a school mark, the numbers are slightly higher than in the figures on pages 4 to 7.

Figure 2-2

Number of Students Writing Diploma Examinations in Each Course 1992–1993, 1993–1994 and 1994–1995 School Years



What was the average number of different diploma examinations written by each student in each course during the 1994–95 school year?

As shown in Figure 2-3, the average number of different diploma examinations written by students ranged from a low of 1.51 for students writing the English 33 examination to a high of 4.92 for students writing the Français 30 examination.

What was the distribution of A, B, C, and F for each diploma examination course and how does this distribution compare with distributions of previous years?

The distribution of A, B, C, and F for each course is shown in figures 2-4 to 2-19.

There are two graphs for each course. The first shows the distribution for final course marks over the last three years.

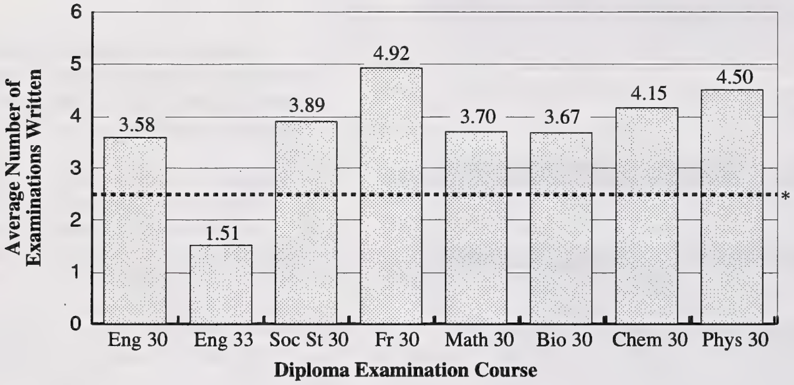
The distributions remained relatively unchanged over time for all courses.

The second of the two graphs shows the 1994–95 school year distribution of A, B, C, and F for the school-awarded mark, the diploma examination mark, and the final course mark.

Note that the number of Fs awarded to students for a final course mark is much lower than the number of Fs awarded for either the school-awarded mark or the diploma examination mark. One reason for this is that no final marks of 48% or 49% are awarded. If the average of the school-awarded mark and the diploma examination mark is 48% or 49%, the student is automatically given 50% as a final mark.

Figure 2-3

Average Number of Different Diploma Examinations Written by Students in Each Course 1994–95 School Year



*----- Average number of different diploma examinations written by all students (2.5). This average has been the same since 1991–92.

Figure 2-4

English 30
Distribution of A, B, C, and F for Final Course Mark Three School Years

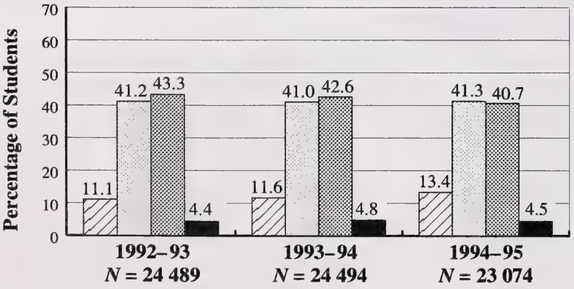
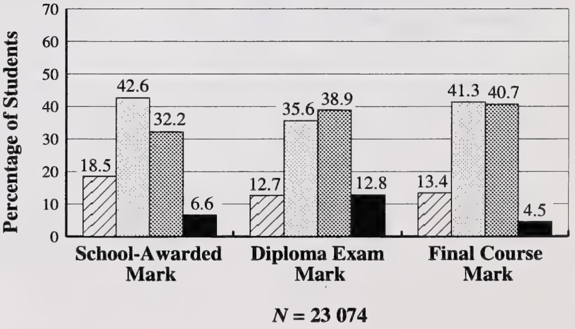


Figure 2-5

English 30
Distribution of A, B, C, and F for School, Examination, and Final Course Marks 1994–95 School Year



▨ A (80–100%) ░ B (65–79%) ▩ C (50–64%) ■ F (0–49%)

Figure 2-6

English 33
Distribution of A, B, C, and F
for Final Course Mark
Three School Years

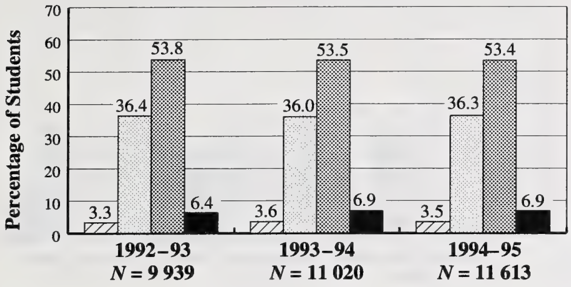


Figure 2-7

English 33
Distribution of A, B, C, and F for School,
Examination, and Final Course Marks
1994–95 School Year

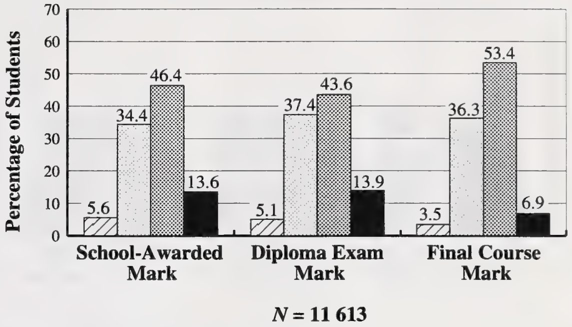


Figure 2-8

Social Studies 30
Distribution of A, B, C, and F
for Final Course Mark
Three School Years

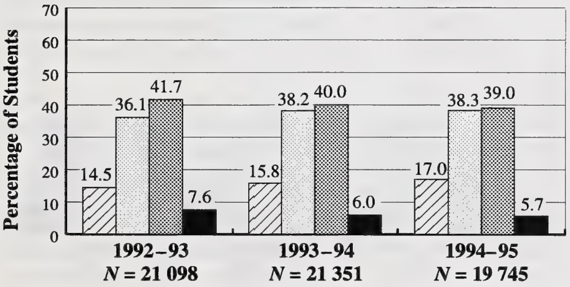


Figure 2-9

Social Studies 30
Distribution of A, B, C, and F for School,
Examination, and Final Course Marks
1994–95 School Year

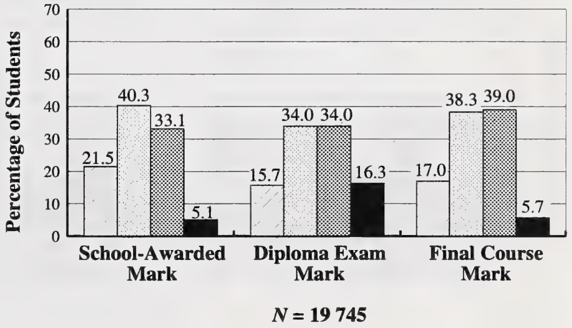


Figure 2-10

Français 30
Distribution of A, B, C, and F
for Final Course Mark
Three School Years

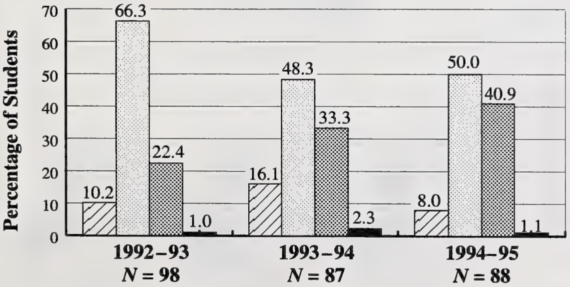
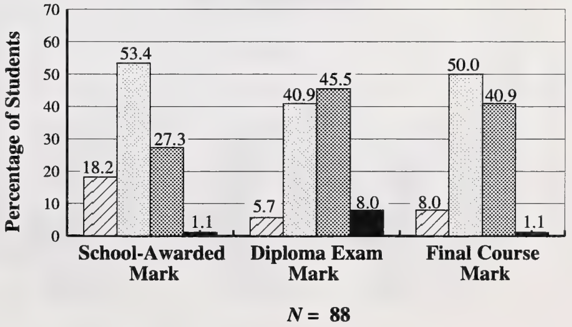


Figure 2-11

Français 30
Distribution of A, B, C, and F for School,
Examination, and Final Course Marks
1994–95 School Year



▨ A (80–100%) ░ B (65–79%) ▩ C (50–64%) ■ F (0–49%)

Figure 2-12

Mathematics 30
Distribution of A, B, C, and F for Final Course Mark Three School Years

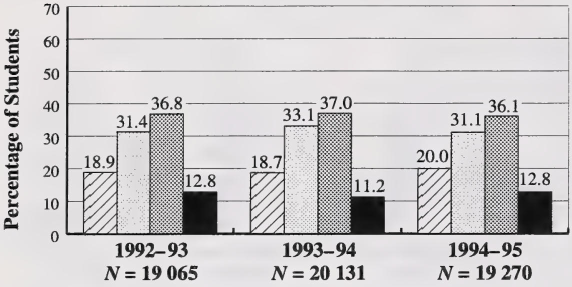


Figure 2-13

Mathematics 30
Distribution of A, B, C, and F for School, Examination, and Final Course Marks 1994–95 School Year

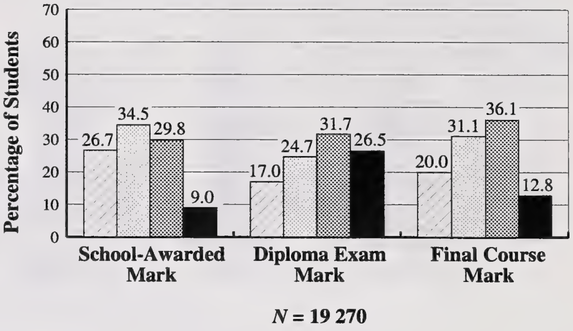


Figure 2-14

Biology 30
Distribution of A, B, C, and F for Final Course Mark Three School Years

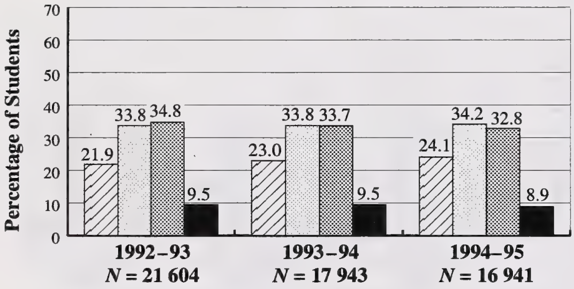


Figure 2-15

Biology 30
Distribution of A, B, C, and F for School, Examination, and Final Course Marks 1994–95 School Year

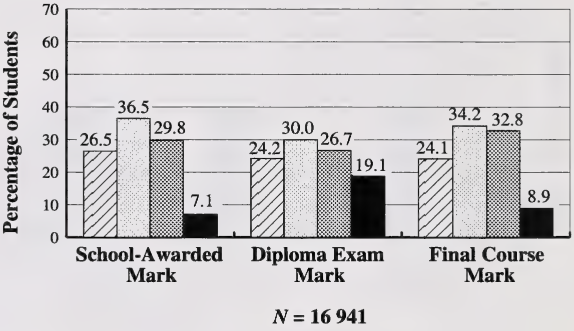


Figure 2-16

Chemistry 30
Distribution of A, B, C, and F for Final Course Mark Three School Years

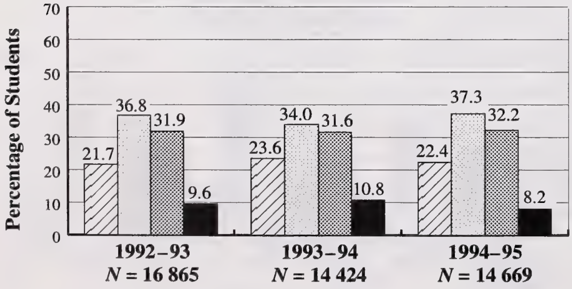
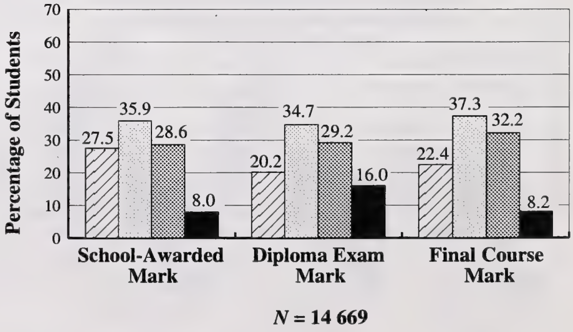


Figure 2-17

Chemistry 30
Distribution of A, B, C, and F for School, Examination, and Final Course Marks 1994–95 School Year



▨ A (80–100%) ░ B (65–79%) ▩ C (50–64%) ■ F (0–49%)

Figure 2-18

Physics 30

Distribution of A, B, C, and F
for Final Course Mark
Three School Years

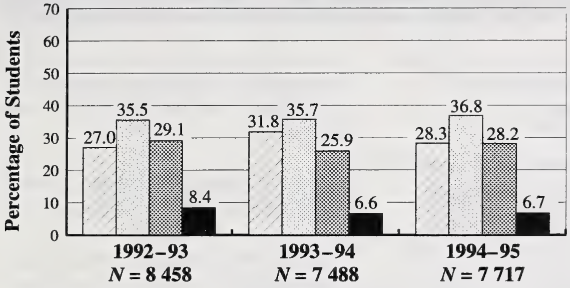
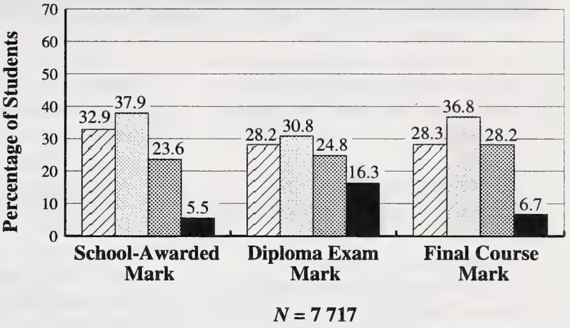


Figure 2-19

Physics 30

Distribution of A, B, C, and F for School,
Examination, and Final Course Marks
1994–95 School Year



▨ A (80–100%) ░ B (65–79%) ▩ C (50–64%) ■ F (0–49%)

For each diploma examination course, what is the correlation between examination marks and school-awarded marks?

Table 2-1 presents the correlation between diploma examination marks and school-awarded marks for each diploma examination course.

The two marks represent two separate assessments of achievement, each based on an overlapping yet different set of curricular objectives. To a large degree, these objectives are similar; however, there is a necessary degree of difference.

The diploma examinations are limited to measuring achievement of objectives that can be effectively assessed by paper and pencil tests. School assessments also measure achievement of additional objectives such as laboratory skills in the sciences, or speaking and listening skills in English. Therefore, these correlations are expected to be positive and relatively high, but less than 1.0.

Other factors that contribute to the less-than-perfect correlations include variations among teachers' assessment practices, the longer time span of school-based assessment, the effect of failure to complete assignments, and the individual student's approach to the different types of assessment.

Table 2-1

Correlation of Diploma Examination Marks and
School-Awarded Marks by Course
1994–95 School Year

Course	Number of Students	Correlation Coefficient
English 30	23 074	0.633
English 33	11 613	0.385
Social Studies 30	19 745	0.746
Français 30	88	0.695
Mathematics 30	19 270	0.881
Biology 30	16 941	0.800
Chemistry 30	14 669	0.783
Physics 30	7 717	0.763

Section 3

Results by Gender

This section of the report provides separate results for males and females. These questions will be answered:

- What proportion of males and females write diploma examinations?
- Is the percentage of males and females who achieve the standards the same in each course?
- Are males and females awarded similar school marks? Is the pattern the same for diploma examination marks?

What proportion of males and females write diploma examinations?

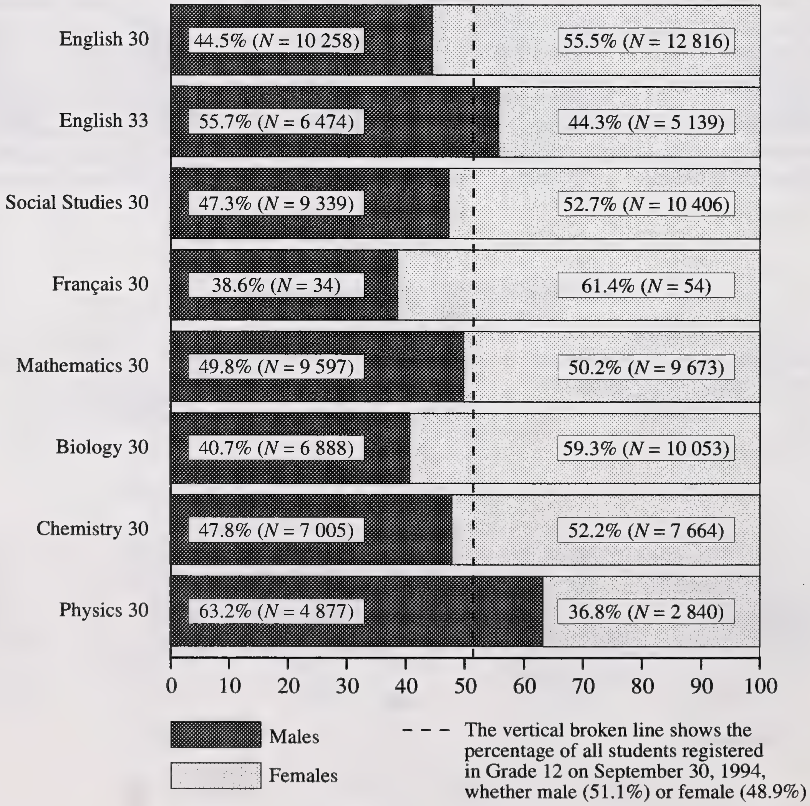
Of all students registered in Grade 12 on September 30, 1994, 51% were male. Figure 3-1 shows, however, that in the 1994–95 school year, fewer males than females wrote diploma examinations in all courses except English 33 and Physics 30. The reasons for this under-representation of males among students writing most diploma examinations cannot be determined from the available data.

Schools and jurisdictions that wish to explore this relationship further could look at:

- the percentage of males and females seeking a high school diploma
- the percentage of males and females returning to school for a fourth year of high school and in which courses they are enrolling
- the percentage of males and females who register in a course but drop the course before writing a diploma examination.

Figure 3-1

Ratio of Males to Females Writing Diploma Examinations
1994–95 School Year



Is the percentage of males and females who achieve the standards the same in each course?

Figure 3-2 shows that a higher percentage of males than females achieved the *standard of excellence* in their final course marks for Social Studies 30, Mathematics 30, and Chemistry 30.

A higher percentage of females than males achieved the *standard of excellence* in their final course marks in English 30, Français 30, English 33, Biology 30, and Physics 30. The percentage of females who achieved the *acceptable standard* exceeded the percentage of males in all courses except for Social Studies 30, Français 30, and Mathematics 30.

Table 3-1 shows the number of male and female students who achieved standards in each course.

Figure 3-2

Percentage of Students Achieving Standards, by Gender (Final Course Mark)
1994–95 School Year

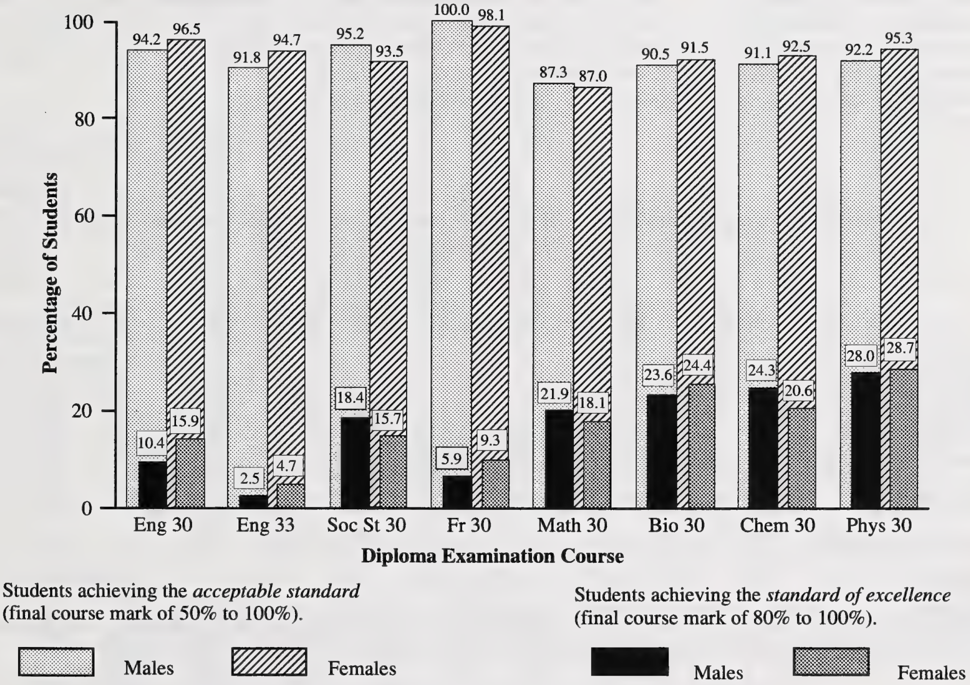


Table 3-1

Number of Students Achieving Standards, by Gender (Final Course Mark)
1994–95 School Year

Course	Students Achieving the Acceptable Standard			Students Achieving the Standard of Excellence		
	Male	Female	Total	Male	Female	Total
English 30	9 660	12 369	22 029	1 069	2 034	3 103
English 33	5 945	4 896	10 814	161	242	403
Social Studies 30	8 890	9 729	18 619	1 714	1 635	3 349
Français 30	34	53	87	2	5	7
Mathematics 30	8 380	8 414	16 794	2 104	1 746	3 850
Biology 30	6 234	9 203	15 437	1 627	2 451	4 078
Chemistry 30	6 382	7 089	13 471	1 704	1 575	3 279
Physics 30	4 496	2 707	7 203	1 366	816	2 182

Are males and females awarded similar school marks? Is the pattern the same for diploma examination marks?

Table 3-2 shows the results of a study of the school-awarded marks and diploma examination marks for males and females. When averages in school-awarded marks are compared, females achieved higher averages than males in all courses except Mathematics 30. In all subjects except Français 30, the percentage of females achieving an F was smaller than the percentage of males. A similar or greater percentage of females than males achieved an A in all subjects except Chemistry 30 and Mathematics 30.

In diploma examination marks, females achieved higher averages than males in English 30, English 33, Français 30, and Physics 30. The percentage of females achieving an F was greater than the percentage of males achieving an F in all subjects except English 30, English 33, and Physics 30. A smaller percentage of females than males achieved an A on all diploma examinations except for English 30, English 33, and Français 30.

Noteworthy differences between males and females occurred in English 30, English 33, and Social Studies 30. In English 30, 22.4% of females achieved an A based on school-awarded marks, but only 13.7% of males achieved an A. On the diploma examination, the difference narrowed, with 14.2% of females and 10.7% of males achieving an A. In English 33, 9.2% of the females achieved an F in school-awarded marks compared with 17.1% of males. On the diploma examination, 13.4% of females and 14.4% of males achieved an F. In Social Studies 30, even though similar percentages of males and females achieved an F in school-awarded marks, 19.7% of the females compared with 12.5% of males achieved an F in diploma examination marks.

Table 3-2

Provincial Percentage Distribution of A, B, C, and F, Average, and Standard Deviation* of Scores
1994–95 School Year

	School-Awarded Mark			Diploma Exam Mark			Final Course Mark		
Course	Total	Male	Female	Total	Male	Female	Total	Male	Female
English 30									
A (80–100%)	18.5	13.7	22.4	12.7	10.7	14.2	13.4	10.4	15.9
B (65–79%)	42.6	39.8	44.8	35.6	34.0	36.9	41.3	38.2	43.8
C (50–64%)	32.2	37.8	27.7	38.9	40.8	37.3	40.7	45.6	36.8
F (0–49%)	6.6	8.6	5.1	12.8	14.5	11.6	4.5	5.8	3.5
Average (%)	67.3	65.0	69.1	64.2	63.1	65.1	66.2	64.5	67.5
Standard Deviation (%)	12.5	12.6	12.2	13.0	12.9	12.9	11.5	11.3	11.4
English 33									
A (80–100%)	5.6	3.5	8.4	5.1	4.7	5.6	3.5	2.5	4.7
B (65–79%)	34.4	28.5	41.8	37.4	35.1	40.2	36.3	30.4	43.7
C (50–64%)	46.6	51.0	40.7	43.6	45.8	40.8	53.4	59.0	46.3
F (0–49%)	13.6	17.1	9.2	13.9	14.4	13.4	6.9	8.2	5.3
Average (%)	60.8	58.6	63.5	62.0	61.4	62.7	61.9	60.5	63.7
Standard Deviation (%)	11.9	11.7	11.7	11.2	11.1	11.3	9.7	9.5	9.8
Social Studies 30									
A (80–100%)	21.5	21.5	21.5	15.7	18.2	13.5	17.0	18.4	15.7
B (65–79%)	40.3	39.8	40.7	34.0	37.3	31.0	38.3	40.3	36.6
C (50–64%)	33.1	33.4	32.9	34.0	32.0	35.8	39.0	36.6	41.2
F (0–49%)	5.1	5.3	4.9	16.3	12.5	19.7	5.7	4.8	6.5
Average (%)	68.3	68.1	68.4	64.3	66.1	62.6	66.6	67.5	65.8
Standard Deviation (%)	12.4	12.5	12.3	14.2	13.8	14.3	12.4	12.2	12.5
Français 30**									
A (80–100%)	18.2	11.8	22.2	5.7	0.0	9.3	8.0	5.9	9.3
B (65–79%)	53.4	55.9	51.9	40.9	41.2	40.7	50.0	38.2	57.4
C (50–64%)	27.3	32.4	24.1	45.5	52.9	40.7	40.9	55.9	31.5
F (0–49%)	1.1	0.0	1.9	8.0	5.9	9.3	1.1	0.0	1.9
Average (%)	70.3	68.5	71.5	62.6	60.9	63.7	66.7	64.9	67.8
Standard Deviation (%)	10.3	9.4	10.8	10.5	9.7	10.9	9.6	8.7	10.1

(continued)

Table 3-2 (*continued*)

Course	School-Awarded Mark			Diploma Exam Mark			Final Course Mark		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Mathematics 30									
A (80–100%)	26.7	27.5	25.9	17.0	19.4	14.6	20.0	21.9	18.1
B (65–79%)	34.5	33.9	35.1	24.7	25.3	24.2	31.1	30.6	31.6
C (50–64%)	29.8	29.0	30.6	31.7	30.4	33.0	36.1	34.8	37.3
F (0–49%)	9.0	9.6	8.4	26.5	25.0	28.1	12.8	12.7	13.0
Average (%)	68.6	68.7	68.5	61.1	62.1	60.0	65.2	65.8	64.6
Standard Deviation (%)	14.7	15.0	14.4	17.4	17.7	17.0	15.3	15.6	14.9
Biology 30									
A (80–100%)	26.5	25.0	27.6	24.2	24.4	24.1	24.1	23.6	24.4
B (65–79%)	36.5	34.6	37.8	30.0	29.4	30.4	34.2	32.8	35.2
C (50–64%)	29.8	31.8	28.5	26.7	27.1	26.4	32.8	34.1	32.0
F (0–49%)	7.1	8.6	6.1	19.1	19.1	19.2	8.9	9.5	8.5
Average (%)	69.0	67.9	69.7	65.6	65.6	65.6	67.6	67.1	68.0
Standard Deviation (%)	13.6	14.0	13.3	16.8	16.9	16.8	14.4	14.6	14.3
Chemistry 30									
A (80–100%)	27.5	28.5	26.5	20.2	22.3	18.2	22.4	24.3	20.6
B (65–79%)	35.9	34.1	37.6	34.7	34.3	35.1	37.3	35.8	38.6
C (50–64%)	28.6	28.3	29.0	29.2	27.7	30.5	32.2	31.0	33.3
F (0–49%)	8.0	9.1	6.9	16.0	15.7	16.2	8.2	8.9	7.5
Average (%)	69.1	69.0	69.2	65.6	66.3	65.1	67.7	68.0	67.5
Standard Deviation (%)	14.2	14.8	13.6	15.3	15.8	14.8	13.9	14.5	13.4
Physics 30									
A (80–100%)	32.9	31.2	35.8	28.2	28.5	27.6	28.3	28.0	28.7
B (65–79%)	37.9	36.3	40.7	30.8	30.2	31.7	36.8	35.0	39.9
C (50–64%)	23.6	25.7	20.0	24.8	24.3	25.6	28.2	29.2	26.7
F (0–49%)	5.5	6.7	3.5	16.3	17.0	15.0	6.7	7.8	4.7
Average (%)	71.5	70.5	73.2	67.6	67.4	67.7	69.9	69.4	70.8
Standard Deviation (%)	13.6	14.1	12.4	16.8	17.3	16.0	14.3	14.8	13.3

*Standard deviation is an indication of the amount of variation in a distribution. About 68% of the students' marks will fall within plus or minus one "standard deviation" of the average mark. On the English 30 Diploma Examination, for example, 68% of students who wrote the examination scored between 51.2% and 77.2%.

**Because very few students wrote the Français 30 examinations, results must be interpreted with caution.

Summary

There are gender differences in the marks obtained for the diploma examination courses. A larger proportion of females than males are writing the diploma examinations and obtaining a high school diploma. Although the achievement of females is similar to or higher than the achievement of males in school-awarded marks, their achievement on many of the diploma examinations is below the achievement of males.

Since individual jurisdiction results will show patterns that differ from the province-wide results, school boards are encouraged to explore gender differences in their own jurisdictions.

The data presented in this section show gender differences to a greater or lesser degree in all diploma examination courses. Schools should consider these results carefully within their own contexts.

We welcome any comments regarding observations or thoughts you have on gender differences in achievement. If you would like to share your thoughts with us, please contact Elana Scraba, Assistant Director, Humanities Diploma Examinations Program, at 403-427-0010 or write to her at Student Evaluation Branch, Alberta Education, 11160 Jasper Avenue, Edmonton, Alberta T5K 0L2.

Section 4

Results for Population Subgroups

The majority of students who wrote a 1994–95 diploma examination took the course in school as regular students; the second largest group were mature students* with current school-awarded marks. Results for students with both school-awarded marks and diploma examination marks are reported in sections 2 and 3 of this report.

This section reports the results for all students, *including those with no school-awarded marks.* Subgroup definitions and results are reported.

This section will answer these questions:

- Does the percentage of mature students writing diploma examinations vary across courses?
- How does the performance of mature students with current school-awarded marks compare with the performance of regular students with current school-awarded marks?
- How does the performance of students with school marks brought forward compare with the results of students with current school-awarded marks?
- How does the performance of mature students challenging the examination compare with the performance of other mature student subgroups?
- For subgroups with current school-awarded marks and diploma examination marks, how does the diploma examination mark average compare with the school-awarded mark average?

Subgroup Definitions

Subgroups are defined by a combination of mature student status and school-awarded mark status. Students in all subgroups have a current diploma examination mark. The subgroups are:

- **Regular School** Students with a current school-awarded mark. This group comprises regular students and mature students.

  Regular Students are students without mature status who have a current school-awarded mark.

  Mature Students are students with mature status who have a current school-awarded mark.

- **Regular Students, School Mark Brought Forward** Regular students who do not have a current school-awarded mark but who have an earlier school-awarded mark.
- **Mature Students, School Mark Brought Forward** Mature students who do not have a current school-awarded mark but who have an earlier school-awarded mark.
- **Mature Students, Challenging Examination** Students with mature status who have no school-awarded mark.
- **Regular Students, No School Mark** Regular students who have no school-awarded mark.

Note:

1. Mature students “challenging” a diploma examination do not take the course but do receive course credit if they pass the examination; regular students with no school-awarded mark receive no course credit.
2. When a mature student earns a diploma examination mark that is higher than that student’s school-awarded mark, the diploma examination mark becomes the final course mark; otherwise, the normal blending is applied to calculate the final course mark.

Excluded Groups

Not included in any of the subgroups are students who were exempted from all or part of the examination or who wrote a substantially different form of the examination because of special considerations. Students in English 30 or English 33 who, by special permission, wrote the two parts of the examination in two different examination sittings (e.g., January and June) are also excluded. Very few students fall into these categories.

Results for Français 30 are not included because of the small number of students writing the examination.

Results

Three tables are provided for each diploma examination course. In the first table, the number and percentage of regular and mature students writing are given. The second table gives the number of students in each subgroup, their average diploma examination mark, and standard deviations of diploma examination marks for all subgroups. The third table provides data for subgroups with school-awarded marks. It includes the number of students in each subgroup, their average school-awarded mark, and the standard deviation of school-awarded marks for these subgroups.

---

* A student with mature status is one who, as of September 1 of the current school year, is 20 years of age or older *or* is 19 years of age and has been out of school for eight consecutive months since reaching the age of 18 *or* is the holder of a previously awarded Alberta high school diploma or equivalent (see the *Guide to Education, Senior High School Handbook, 1993–94,* page 82).

English 30: 1994–95 School Year

Achievement in English 30 by subgroups is compared in Tables 4-1 to 4-3. About one in six English 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, regular students achieved higher averages in both school-awarded marks and diploma examination marks than did mature students.

Among all subgroups, regular students with no school-awarded marks achieved the highest average in diploma examination marks, while mature students with school marks brought forward achieved the lowest average.

Table 4-1

English 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	20 037	84.1
Mature Students	3 779	15.9
Total	23 816	100.0

Table 4-2

English 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	21 941	64.4	12.9
Regular Students	18 972	65.2	12.7
Mature Students	2 969	59.2	13.1
Regular Students, School Mark Brought Forward	884	62.8	12.6
Mature Students, School Mark Brought Forward	249	55.0	11.7
Mature Students, Challenging Examination	561	60.6	14.2
Regular Students, No School Mark	181	68.5	16.8

Table 4-3

English 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	21 941	67.3	12.5
Regular Students	18 972	68.0	12.3
Mature Students	2 969	63.3	13.3
Regular Students, School Mark Brought Forward	884	67.4	12.8
Mature Students, School Mark Brought Forward	249	64.0	11.3

---

*For an explanation of standard deviation, see footnote to Table 3-2.

English 33: 1994–95 School Year

Achievement in English 33 by subgroups is compared in Tables 4-4 to 4-6. About one in six English 33 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, mature students achieved a higher average in school-awarded marks than regular students did; however, regular students achieved a slightly higher average on the diploma examination than did mature students.

Among all subgroups, mature students challenging examinations achieved the highest average in diploma examination marks. Subgroups with school marks brought forward achieved much lower averages in diploma examination marks compared with the other subgroups.

Table 4-4

English 33
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	10 104	82.3
Mature Students	2 180	17.7
Total	12 284	100.0

Table 4-5

English 33
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	11 336	62.1	11.1
Regular Students	9 713	62.2	10.7
Mature Students	1 623	61.9	13.4
Regular Students, School Mark Brought Forward	205	55.4	11.1
Mature Students, School Mark Brought Forward	72	53.7	10.5
Mature Students, Challenging Examination	485	64.5	13.7
Regular Students, No School Mark	186	63.9	11.3

Table 4-6

English 33
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	11 336	60.9	11.9
Regular Students	9 713	60.5	11.7
Mature Students	1 623	63.2	12.8
Regular Students, School Mark Brought Forward	205	54.3	12.7
Mature Students, School Mark Brought Forward	72	61.5	9.8

*For an explanation of standard deviation, see footnote to Table 3-2.

Social Studies 30: 1994–95 School Year

Achievement in Social Studies 30 by subgroups is compared in Tables 4-7 to 4-9. About one in eleven Social Studies 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, regular students achieved higher averages in both school-awarded marks and diploma examination marks than did mature students.

Among all subgroups, regular students with current school-awarded marks achieved the highest average on the examination. Subgroups with no current school-awarded marks achieved much lower averages in diploma examination marks than did regular school subgroups.

Table 4-7

Social Studies 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	18 269	91.3
Mature Students	1 742	8.7
Total	20 011	100.0

Table 4-8

Social Studies 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	19 310	64.5	14.2
Regular Students	17 788	64.8	14.1
Mature Students	1 522	59.9	14.1
Regular Students, School Mark Brought Forward	380	56.6	13.6
Mature Students, School Mark Brought Forward	55	51.1	12.2
Mature Students, Challenging Examination	165	51.5	15.3
Regular Students, No School Mark	101	55.6	15.0

Table 4-9

Social Studies 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	19 310	68.4	12.3
Regular Students	17 788	68.7	12.2
Mature Students	1 522	64.6	13.4
Regular Students, School Mark Brought Forward	380	62.2	13.7
Mature Students, School Mark Brought Forward	55	62.2	11.7

---

*For an explanation of standard deviation, see footnote to Table 3-2.

Mathematics 30: 1994–95 School Year

Achievement in Mathematics 30 by subgroups is compared in Tables 4-10 to 4-12. About one in six Mathematics 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, regular students achieved higher averages in both school-awarded marks and diploma examination marks than did mature students.

Among all subgroups, regular students with school marks brought forward achieved the highest average on the diploma examination, while mature students challenging examinations and regular students with no school marks achieved the lowest averages.

Table 4-10

Mathematics 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	16 550	84.9
Mature Students	2 940	15.1
Total	19 490	100.0

Table 4-11

Mathematics 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	18 189	60.7	17.3
Regular Students	15 533	61.5	17.3
Mature Students	2 656	55.9	16.4
Regular Students, School Mark Brought Forward	933	69.5	16.7
Mature Students, School Mark Brought Forward	148	53.0	17.5
Mature Students, Challenging Examination	136	44.4	19.5
Regular Students, No School Mark	84	46.7	21.0

Table 4-12

Mathematics 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	18 189	68.4	14.7
Regular Students	15 533	68.7	14.6
Mature Students	2 656	66.1	15.1
Regular Students, School Mark Brought Forward	933	74.1	14.6
Mature Students, School Mark Brought Forward	148	65.7	16.2

---

*For an explanation of standard deviation, see footnote to Table 3-2.

Biology 30: 1994–95 School Year

Achievement in Biology 30 by subgroups is compared in Tables 4-13 to 4-15. About one in nine Biology 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, mature students achieved a lower average in both school-awarded marks and in diploma examination marks than did regular students.

Among all subgroups, students with current school-awarded marks achieved the highest average on the diploma examination. Mature students challenging the examination achieved the lowest average on diploma examination marks.

Table 4-13

Biology 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	15 196	88.7
Mature Students	1 936	11.3
Total	17 132	100.0

Table 4-14

Biology 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	16 566	65.7	16.8
Regular Students	14 849	66.4	16.7
Mature Students	1 717	60.0	16.7
Regular Students, School Mark Brought Forward	291	62.9	17.7
Mature Students, School Mark Brought Forward	84	51.0	17.0
Mature Students, Challenging Examination	135	49.4	18.9
Regular Students, No School Mark	56	53.9	19.1

Table 4-15

Biology 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	16 566	69.0	13.6
Regular Students	14 849	69.4	13.4
Mature Students	1 717	65.4	14.6
Regular Students, School Mark Brought Forward	291	66.9	15.0
Mature Students, School Mark Brought Forward	84	63.0	13.4

*For an explanation of standard deviation, see footnote to Table 3-2.

Chemistry 30: 1994–95 School Year

Achievement in Chemistry 30 by subgroups is compared in Tables 4-16 to 4-18. About one in nine Chemistry 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, regular students achieved higher averages in both school-awarded marks and diploma examination marks than did mature students.

Among all subgroups, regular students with current school-awarded marks achieved the highest average in diploma examination marks. Subgroups with no current school marks, except regular students with school marks brought forward, achieved much lower averages than did regular school subgroups.

Table 4-16

Chemistry 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	13 081	88.3
Mature Students	1 734	11.7
Total	14 815	100.0

Table 4-17

Chemistry 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	14 386	65.7	15.3
Regular Students	12 837	66.2	15.3
Mature Students	1 549	62.1	14.8
Regular Students, School Mark Brought Forward	205	64.4	17.5
Mature Students, School Mark Brought Forward	78	53.2	14.2
Mature Students, Challenging Examination	107	51.4	17.6
Regular Students, No School Mark	39	50.4	19.2

Table 4-18

Chemistry 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	14 386	69.1	14.2
Regular Students	12 837	69.4	14.1
Mature Students	1 549	66.9	14.4
Regular Students, School Mark Brought Forward	205	69.7	16.1
Mature Students, School Mark Brought Forward	78	63.4	13.6

---

*For an explanation of standard deviation, see footnote to Table 3-2.

Physics 30: 1994–95 School Year

Achievement in Physics 30 by subgroups is compared in Tables 4-19 to 4-21. About one in ten Physics 30 students who wrote the 1994–95 diploma examinations had mature status.

Of students with current school-awarded marks, regular students achieved higher averages in both school-awarded marks and diploma examination marks than did mature students.

Among all subgroups, regular students with current school-awarded marks achieved the highest average on the diploma examination.

Subgroups with no current school marks, except regular students with school marks brought forward, achieved much lower averages in diploma examination marks than did subgroups with current school marks.

Table 4-19

Physics 30
Status of Students Writing

Type of Student	Number of Students	Percentage
Regular Students	7 005	89.8
Mature Students	794	10.2
Total	7 799	100.0

Table 4-20

Physics 30
Diploma Examination Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	7 546	67.7	16.8
Regular Students	6 837	68.2	16.7
Mature Students	709	62.2	16.4
Regular Students, School Mark Brought Forward	149	64.9	18.0
Mature Students, School Mark Brought Forward	22	48.8	19.1
Mature Students, Challenging Examination	63	43.7	17.6
Regular Students, No School Mark	19	52.7	22.2

Table 4-21

Physics 30
School-Awarded Marks for Population Subgroups

Subgroup	Number of Students	Average	Standard Deviation*
All Regular School	7 546	71.5	13.5
Regular Students	6 837	72.0	13.4
Mature Students	709	67.3	14.0
Regular Students, School Mark Brought Forward	149	72.2	14.9
Mature Students, School Mark Brought Forward	22	62.0	12.8

---

*For an explanation of standard deviation, see footnote to Table 3-2.

Summary

Does the percentage of mature students writing diploma examinations vary across courses?

In 1994–95, the percentage of mature students writing examinations ranged from 8.7% in Social Studies 30 to 17.7% in English 33.

How does the performance of mature students with current school-awarded marks compare with the performance of regular students with current school-awarded marks?

In 1994–95, average marks on diploma examinations for regular students with current school-awarded marks were higher than the averages for mature students with current school-awarded marks in all courses.

How does the performance of students with school marks brought forward compare with the results of students with current school-awarded marks?

On the 1995 diploma examinations, students with school marks brought forward achieved lower averages in all courses except in Mathematics 30 than did students with current school-awarded marks.

In Mathematics 30, regular students with school marks brought forward achieved the highest average.

How does the performance of mature students challenging the examination compare with the performance of other mature student subgroups?

On the 1995 diploma examinations, mature students challenging the diploma examination achieved the highest average in English 33 but the lowest averages in Biology 30, Mathematics 30, Chemistry 30, and Physics 30.

For subgroups with current school-awarded marks and diploma examination marks, how does the diploma examination mark average compare with the school-awarded mark average?

Both subgroups had higher averages in school-awarded marks than in diploma examination marks, with the exception of English 33. In English 33, regular students achieved a higher average in diploma examination marks than they did in school-awarded marks. The largest differences were found in Mathematics 30 where the averages for school-awarded marks were 6.8% and 10.2% higher than the averages for diploma examination marks for regular students and mature students respectively.

Section 5

Special Study: Grade 12 Enrollment Decline—A Preliminary Assessment

There were 3 255 fewer Grade 12 enrollments in September 1994 than in September 1993, ending a five-year trend of consecutive enrollment increases. In order to gain some insights into the reasons behind this drop in enrollment, Educational Information Services conducted a preliminary investigation.

This investigation confirmed the decline in enrollments, determined characteristics of students associated with this decline, and revealed related course-completion and diploma-exam participation information. The investigation also explored demographic, economic, and policy-related factors to help explain the decline.

Findings were summarized as follows:

- A decline of 3 255 Grade 12 enrollments occurred between September 1993 and September 1994
- Most of the decline was among older students. Students aged 18 and older accounted for over 85% of the drop in enrollment. Moreover, in terms of a percentage decline, the group of oldest students (20 and 21 or older) experienced the greatest decrease in enrollment (–35% and –28% respectively)
- Consistent with the fact that older students accounted for the largest portion of the drop in enrollment, the number of returning students completing Grade 12 diploma courses also dropped considerably (by 4 782). Notably, the number of students completing diploma courses for the first time grew by 2 135
- The decline in enrollment was province-wide; only 14 of the 66 public school jurisdictions experienced an increase in enrollment. Declines in the four Edmonton and Calgary school districts alone accounted for two-thirds of the drop in enrollment
- While Grade 12 enrollments declined, population projections showed that the source population (operationalized as the number of 16-, 17-, and 18-year-olds in the province) actually increased between September 1993 and September 1994, suggesting that demographic factors were not behind the decline
- Total provincial employment rose by 7% between September 1993 and September 1994—the largest September-to-September increase since 1981. This suggests that some students may have entered the labour market instead of returning to school
- Part of the decline in enrollment may be explained by student movement from the Alberta Education system to the Alberta Advanced Education and Career Development System. In 1994–95, the day program of Edmonton Continuing Education's academic upgrading program (which historically enrolled roughly 1 000 students) was dropped, while at the same time, enrollment at AVC Edmonton increased by nearly 2 000 from the previous year
- With the introduction of the Student Information System (SIS) in 1993–94 coinciding with the drop in enrollment, there was some concern that perhaps the historical enrollment counts may have been artificially high. That is, the enrollment decline in 1994–95 may not have been due to actual drops in enrollment, but may have been a reflection of more accurate information collected by SIS. However, the greatest declines in enrollment were concentrated among the older age categories (ages 18 and older), while only small declines were noted in the younger age categories (ages 17 and younger). Had the previous enrollment data been artificially high, the introduction of the SIS should have caused enrollment declines of relatively the same magnitude across all ages.

Given the complexity of the circumstances surrounding the enrollment decline, definitive reasons for its cause are not presented. However, the investigation highlights several possible explanations that may help jurisdictions in analyzing their own enrollment patterns.

Figures within this report represent the best information currently available to Educational Information Services.

This document is a summary of the full report produced in September 1995. For a complete copy of this report, contact Educational Information Services at 403-427-9027.

Descriptive Statistics

Enrollment Trends

Over the last decade, the enrollment count of Grade 11 students in a given year has always been associated with more Grade 12 students the following year. During the last few years, this increase has been more than 30%; however, this increase dropped to 21% between 1993–94 and 1994–95.

Although registration* counts were higher than enrollment** counts, registration figures appear to exhibit the same trend as enrollment figures. The number of Grade 12 student registrations decreased from 65 771 in 1993–94 to 58 988 in 1994–95—a decline of approximately 10%.

Figure 5-1 and Table 5-1 show that the number of Grade 12 enrollments decreased from 47 467 in September 1993 to 44 212 in September 1994—a decrease of 3 255 enrollments or 7%. This decline follows a history of five consecutive increases in enrollments.

* A registration is a record that is created each time a student enrolls in a school. Since, in a given year, a student may enroll in more than one school or enroll more than once in the same school, registration counts tend to be higher than enrollment counts.

**Enrollment is the headcount of students, both full- and part-time, on September 30 of a given school year. This count may include students not funded by the Alberta government (e.g. students older than 20).

Figure 5-1

Grade 12 Enrollments
Alberta
1984–85 to 1994–95 School Years

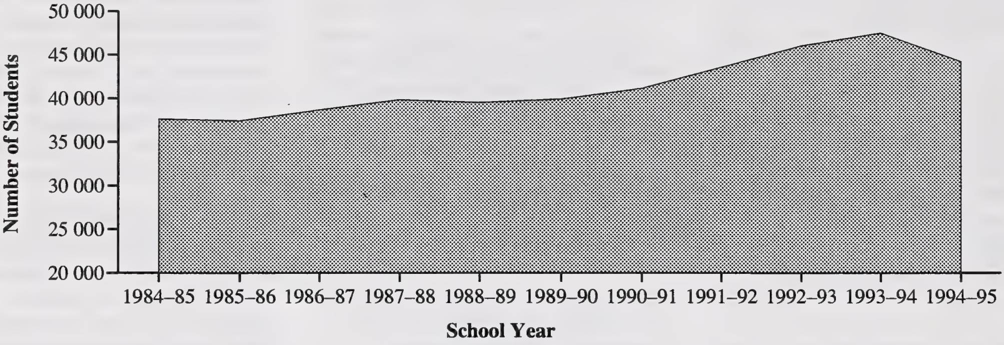


Table 5-1

Grade 12 Enrollments, Alberta, 1984–85 to 1994–95 School Years

Year	1984–85	1985–86	1986–87	1987–88	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95
Enrollment	37 610	37 402	38 646	39 804	39 474	39 882	41 113	43 542	46 007	47 467	44 212

Available Grade 12 enrollment information for Canada, the provinces, and the territories indicates that Alberta's increase in Grade 12 enrollments over the last few years was not uncommon. In Canada, Grade 12 enrollment counts increased from 366 471 in 1990–91 to 411 570 in 1992–93 (Statistics Canada Cat. No. 81-229). During this period, Alberta consistently accounted for approximately 11% of these enrollments.

As shown in Figure 5-2 and Table 5-2, four provinces (Ontario, Manitoba, Saskatchewan, and British Columbia) submitting Grade 12 enrollment data to Educational Information Services for the 1992–93 to 1994–95 school years experienced enrollment increases between 1992–93 and 1993–94, similar to those in Alberta. Three provinces (Ontario, Manitoba, and Saskatchewan) experienced a decrease between 1993–94 and 1994–95 (−1%, −3% and −1%, respectively), similar to, but smaller than Alberta's change in enrollment. In contrast, British Columbia experienced an increase in Grade 12 enrollments between 1993–94 and 1994–95.

Figure 5-2

Percentage of Change in Grade 12 Enrollments
Alberta and Select Provinces
1993–94 to 1994–95 School Years

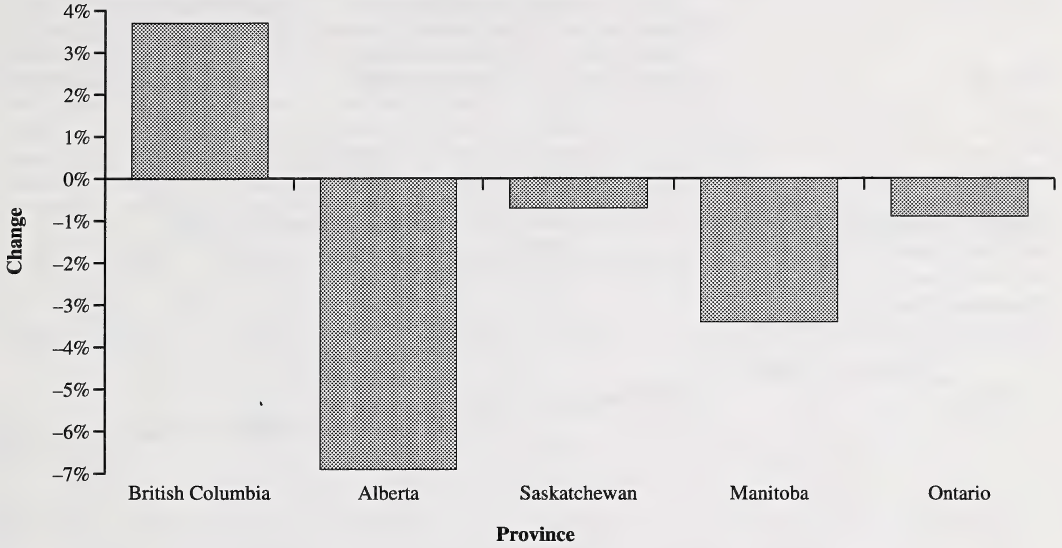


Table 5-2

Grade 12 Enrollments, Alberta and Select Provinces, 1993–94 to 1994–95 School Years

	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario
1993–94	40 580	47 467	15 250	19,786	249 619
1994–95	42 085	44 212	15 145	19 104	247 392
Change in Enrollment 1993–94 to 1994–95	1 505	–3 255	–105	–682	–2 227
Percentage of Change in Enrollment 1993–94 to 1994–95	3.7%	–6.9%	–0.7%	–3.4%	–0.9%

Student Characteristics

Over a period of at least the last decade, more males than females have been enrolled in Grade 12 in Alberta. Both male and female Grade 12 enrollments declined by approximately 7% between September 1993 and September 1994.

Table 5-3 and Figure 5-3 indicate that Grade 12 enrollment counts declined proportionally more for students aged 18 and 19 (–13% and –11%) respectively than for students aged 17 years or less. Grade 12 enrollment counts declined most for those students aged 20 and 21 and older (–35% and –28% respectively).

Students aged 18 and older accounted for 87% of the 3 255 enrollment count decline.

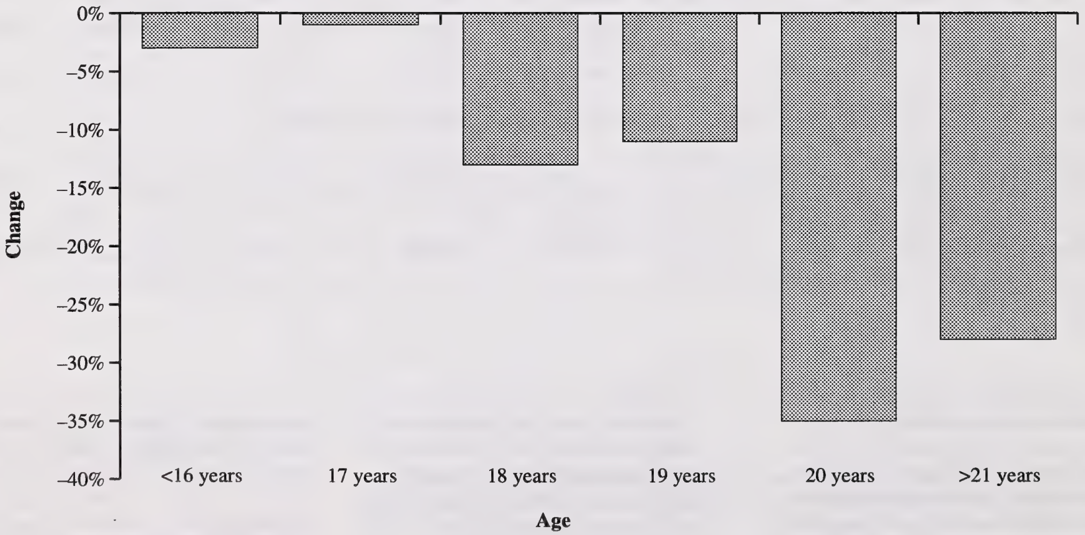
Table 5-3

Grade 12 Enrollments by Age, Alberta, 1992–93 to 1994–95 School Years

	≤16 years	17 years	18 years	19 years	20 years	≥21 years	Total
1992–93	8 683	20 746	9 936	2 874	872	2 896	46 007
1993–94	8 712	21 468	10 521	2 870	875	3 021	47 467
1994–95	8 470	21 293	9 145	2 548	570	2 186	44 212
Change in Enrollment 1993–94 to 1994–95	– 242	–175	–1 376	–322	–305	–835	–3 255
Percentage Change in Enrollment 1993–94 to 1994–95	–3%	–1%	–13%	–11%	–35%	–28%	–7%

Figure 5-3

Percentage of Change in Grade 12 Enrollment by Age
Alberta
1993–94 to 1994–95 School Years



Demographic Characteristics

Statistics Canada's intercensal population estimates indicate that the number of Albertans aged 16, 17, or 18 years* has increased from 106 800 in 1991 to 113 100 in 1994—an increase of approximately 6% (Statistics Canada, Cat. No. 91-213, 91-537).

Generally, Grade 12 enrollments as a proportion of the population aged 16, 17, and 18 years have gradually increased over the last decade (Table 5-4 and Figure 5-4). The exception to this trend occurred between 1992–93 and 1994–95. During this period, the proportion of Grade 12 enrollments for students aged 16, 17, or 18 years, in relation to the population of this particular age group, remained the same then tapered off from 42% to 39%.

Figure 5-4

Grade 12 Enrollments as a Proportion of the Population Aged 16 to 18
Alberta
1986–87 to 1994–95 School Years

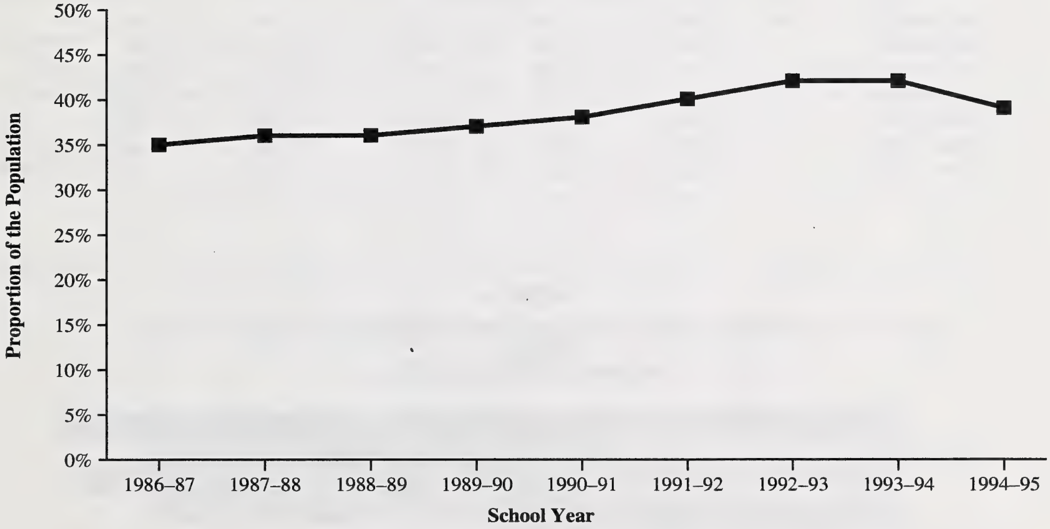


Table 5-4

Population Aged 16 to 18 as Compared to Grade 12 Enrollment, Alberta, 1986–87 to 1994–95 School Years

	1986–87	1987–88	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95
Age 16	37 100	37 300	34 900	34 700	34 500	36 000	37 400	37 500	37 600
Age 17	36 400	37 300	37 600	35 500	35 700	35 300	36 900	37 600	37 700
Age 18	37 400	36 900	37 900	38 300	36 600	36 300	36 100	36 800	37 800
Total Aged 16–18	110 900	111 500	110 400	108 500	106 800	107 600	110 400	111 900	113 100
Grade 12 Enrollment	38 646	39 804	39 474	39 882	41 113	43 542	46 007	47 467	44 212
Grade 12 Enrollment as a Proportion of the Population Aged 16–18	35%	36%	36%	37%	38%	40%	42%	42%	39%

*According to Alberta Education's enrollment figures, approximately 88% of the students enrolled in Grade 12 in September 1994 were aged 16, 17, or 18 years.

Students Writing Diploma Examinations

With the exception of students writing English 33 diploma examinations (whose numbers increased 8% between 1993–94 and 1994–95), the number of students writing each of the high school diploma examinations remained the same or decreased between 1993–94 and 1994–95.

The greatest percentage of reduction in students writing high school diploma examinations was in Social Studies 30 (–5%), followed by Physics 30 and Biology 30 (–4% each).

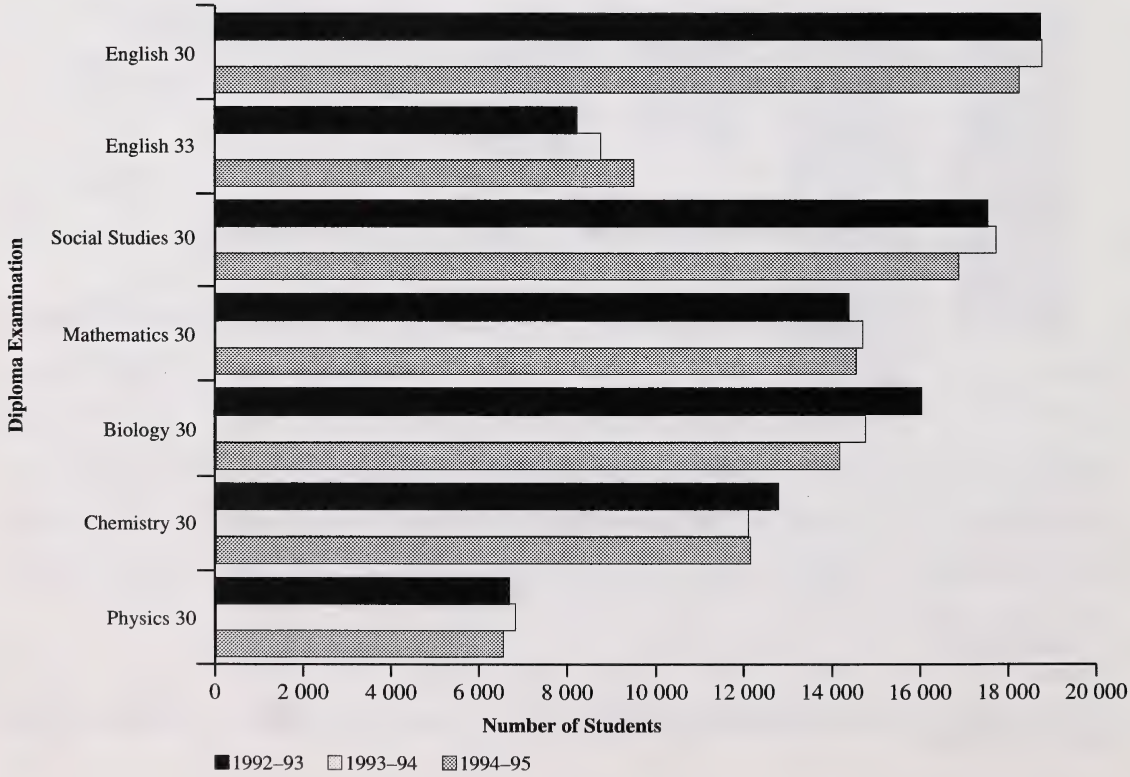
Table 5-5

Students Writing Diploma Examinations by Course, Alberta, 1992–93 to 1994–95 School Years

Course Title	1992–93	1993–94	1994–95	Change 1993–94 to 1994–95	
				Absolute	Percentage
English 30	18 709	18 738	18 223	–515	–3%
English 33	8 204	8 746	9 483	737	8%
Social Studies 30	17 497	17 690	16 843	–847	–5%
Mathematics 30	14 355	14 672	14 518	–154	–1%
Biology 30	15 998	14 727	14 135	–592	–4%
Chemistry 30	12 766	12 081	12 133	52	0%
Physics 30	6 680	6 809	6 533	–276	–4%

Figure 5-5

Students Writing Diploma Examinations by Course
Alberta
1992–93 to 1994–95 School Years



Students Completing Diploma Exam Courses

Table 5-6 and Figure 5-6 show that the number of students completing diploma exam courses for the first time actually increased by approximately 7% between 1993–94 and 1994–95, while the number of students repeating diploma exam courses decreased substantially (approximately 26%).

Proportionally and absolutely, fewer graduates than non-graduates elected to repeat diploma exam courses. In fact, the proportion of graduates who decided to repeat these courses declined by nearly 40%.

Table 5-6

Students Who Completed Diploma Examination Courses* by Type of Student, Alberta, 1992–93 to 1994–95 School Years

Student Type	1992–93	1993–94	1994–95	Change 1993–94 to 1994–95	
				Absolute	Percentage
Non-Repeaters**	32 169	31 574	33 709	2 135	+7%
Repeaters*** Without Diplomas/Certificates	16 970	16 628	12 576	–4 052	–24%
Repeaters***With Diplomas/Certificates	2 269	1 879	1 149	–730	–39%
Total Students Completing Diploma Exam Courses	51 408	50 081	47 434	–2 647	–5%

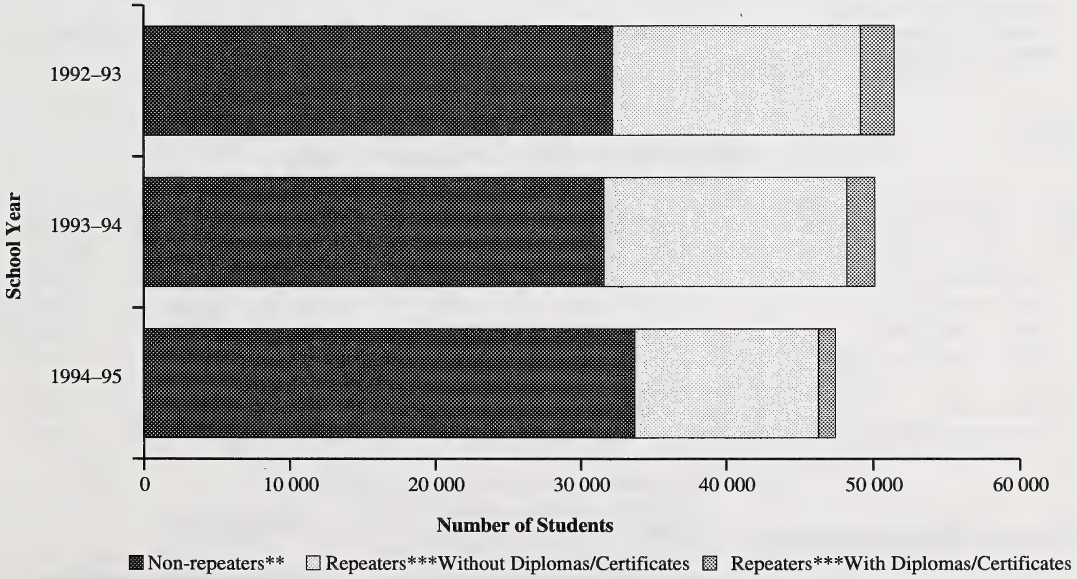


Figure 5-6

Students Who Completed Diploma Examination Courses by Type of Student
Alberta
1992–93 to 1994–95 School Years

---

*Excludes Term 4 (July and August)

** Non-Repeaters are students who have never taken diploma examination courses in prior years.

***Repeaters are students who have taken diploma exam courses in prior years.

Post-Secondary Institution Enrollment

Table 5-7 shows that between 1993–94 and 1994–95 only the vocational colleges (AVCs) experienced a substantial increase in full-time equivalent (FTE) enrollment (+15%).* Much of the increase in vocational college enrollment came from AVC Edmonton. As indicated in Table 5-8, fall full-time enrollment at this college increased substantially (by nearly 2 000 students) between 1993–94 and 1994–95.** AVC Edmonton indicated that, of these 2 000 students, nearly half (989) were enrolled in academic upgrading. Before 1994, these students would have been able to take their academic upgrading through Edmonton Continuing Education, whose day program was dropped during the 1994–95 school year.

---

* "The full-time equivalent count is based on the idea of a student completing enough courses to equal one year of study in a program" (Advanced Education and Career Development, *1989 Enrolment Reporting Manual*).

** FTE enrollment can be lower than full-time enrollment since some students who were enrolled full-time may have been taking less than a full-course load.

Table 5-7

Full-Time Equivalent (FTE) Enrollment in Post-Secondary Institutes, Alberta, 1990–91 to 1994–95 School Years

	1990–91	1991–92	1992–93	1993–94	1994–95
Universities	57 862.6	57 523.6	59 855.2	60 496.1	59 861.5
Public colleges[1]	25 165.0	25 911.8	27 002.0	27.250.4	26 999.0
Technical institutes[1]	15 023.0	15 037.5	15 951.8	15 440.8	15 482.0
Private colleges[1]	2 636.2	2 994.5	3 049.8	2 679.7	2 650.0
AVCs	9 355.3	10 015.6	9 826.5	10 556.7	12 114.0
Hospital schools [2]	1 543.0	1 360.0	1 116.0	730.0	378.0
Grand Total	111 585.1	112 842.9	116 801.2	117 153.7	117 484.5

[1] In 1989–90 a new enrollment reporting system (CIS) was introduced. Guidelines and definitions changed. The public colleges and technical institutes were the first to report enrollment based on this system in 1989–90. The private colleges, excluding Canadian Union, began reporting through CIS in 1993–94. The 1993–94 enrollment for this sector should not be compared with that of previous years.

[2] Since 1991–92, one hospital school ceased operations while other hospital schools have become part of collaborative initiatives with the universities and public colleges.

Table 5-8

Fall Full-Time Enrollment, Vocational Colleges, Alberta, 1990–91 to 1994–95 School Years

	1990–91	1991–92	1992–93	1993–94	1994–95
AVC—Calgary	6 096	6 587	6 092	6 287	6 100
AVC—Edmonton	7 841	8 693	8 029	8 004	10 000
AVC—Lac La Biche	1 719	1 831	1 909	1 999	2 100
AVC—Less Slave Lake	1 433	1 545	1 694	1 936	1 940
Total AVC	17 098	18 656	17 724	18 226	20 140
Percentage Change from Previous Year		9%	–5%	3%	11%

Possible Explanations

Possible explanations for the decline in Grade 12 enrollment between September 1993 and September 1994 fell into four basic categories: changes in provincial demographics, changes in economic conditions, changes in the post-secondary sector, and changes in Alberta Education programs or data collection procedures. A brief discussion of these explanations and their ability to account for the drop in enrollment follows.

Demographic

Declining Source Population

One possible hypothesis to account for the drop in enrollment is that the source population (operationalized as 16-, 17-, and 18-year olds), declined between September 1993 and September 1994. However, Table 5-4 showed that this was not the case. In fact, projected population estimates indicated there was an increase in the number of 16-, 17-, and 18-year olds during this period.

This trend is confirmed by data in Table 5-6 and Figure 5-6. If we look at the number of students completing diploma exam courses for the first time, we see that their number increased from 1993–94 to 1994–95, which is consistent with an increase in the source population.

Emigration/Out-Migration

Any significant change in out-migration would show up in the population, and hence this explanation is subject to the same arguments found above. Furthermore, it is reasonable to expect that given the employment picture in Alberta over the past few years, there would have been significant in-migration.*

Economic

Growth in Employment

Another hypothesis to account for the drop in enrollment is that between September 1993 and September 1994, more students left (or did not return to) school in order to take a job. Table 5-9 and Figure 5-7 indicate that this may have been the case. From September 1993 to September 1994, employment in Alberta rose by 91 000 (or 7%), from 1 264 000 to 1 355 000. This is the largest September-to-September increase since 1981. Moreover, at least some of this growth in employment came from the age group that could have been enrolled in Grade 12, the number of 15- to 19-year-olds who were employed grew by 3 700 (4%) between September 1993 and September 1994 (Statistics Canada, Cat. No. 71-201).**

To a lesser extent, job availability should also have drawn on students who had been upgrading their education for college or university entrance, and who then decided to take advantage of improved labour market conditions instead. If we assume that students who already had a Grade 12 diploma but who were enrolled again in diploma courses were the most employable, and students who were taking Grade 12 diploma courses for the first time were the least employable, we would expect the greatest drop in enrollment in the group of Grade 12 students who already had a high school diploma. Figure 5-10 (derived from Table 5-6 and Figure 5-6) indicates that this was indeed the case.

---

* With the exception of 1992, total provincial employment has increased for every year of this decade (Statistics Canada, Cat. No. 71-201).

** Historical labour force data at the provincial level is not available for age groups since it is being revised in light of new population data collected in the 1991 census.

Table 5-9

Seasonally Adjusted Employment (000s), Alberta, January 1992* to June 1995

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Average
1992	1 247	1 239	1 237	1 238	1 244	1 244	1 240	1 243	1 239	1 237	1 230	1 237	1 239.6
1993	1 234	1 237	1 232	1 231	1 246	1 256	1 251	1 255	1 264	1 268	1 273	1 272	1 251.6
1994	1 309	1 318	1 323	1 320	1 329	1 331	1 330	1 339	1 355	1 359	1 369	1 367	1 337.4
1995	1 368	1 370	1 381	1 375	1 369	1 375	1 371						

*Revised data is not available for 1992.

Table 5-10

The Relative Employability of Students Completing Grade 12 Diploma Exam Courses

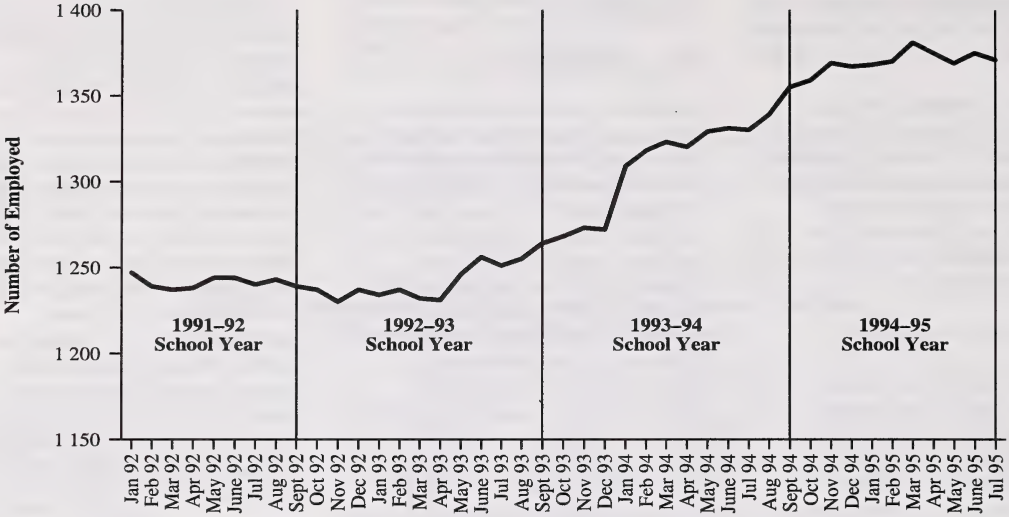
Student Type	Employability	Change in Enrollment
Repeaters* with Diploma/Certificate	Most Employable	–39%
Repeaters* without Diploma/Certificates	Less Employable	–24%
Non-Repeaters**	Least Employable	7%

*Repeaters are students who have taken diploma exam courses in prior years.

**Non-Repeaters are students who have never taken diploma exam courses in prior years.

Figure 5-7

Seasonally Adjusted Employment
Alberta
January 1992* to July 1995



* Revised data not available for 1992.

Changes in the Post-Secondary Sector

Given that a substantial portion of the drop in enrollment (45% of the total decline) was in the group of students who were 19 years or older (and who were likely repeating one or two courses in order to upgrade their marks), it is possible that changes in the post-secondary system may have caused some of the enrollment decline. It has been suggested that increasing entrance requirements have perhaps placed post-secondary education beyond the range of some students, who may have become discouraged and decided not to continue trying to upgrade their marks.

However, data from Alberta Advanced Education and Career Development show that there have been no across-the-board increases in entrance requirements. In fact, certain faculties lowered their entrance requirements in 1994. Moreover, since entrance requirements have been on the rise for the better part of the decade, any effect on student enrollment should have been apparent in any of several years and not restricted exclusively to the 1994–95 school year.

Changes in Alberta Education Programs or Data Collection Procedures

Introduction of the Student Information System (SIS)

With the introduction of the Student Information System (SIS) in 1993–94 coinciding with the drop in enrollment, there has been some concern that perhaps the historical enrollment counts may have been artificially high. That is, the enrollment decline in 1994–95 may not have been due to actual drops in enrollment, but may have been a reflection of more accurate information collected by SIS.

However, as was shown in Table 5-3 and Figure 5-3, the largest drops in enrollment between 1993–94 and 1994–95 occurred among students 18 years of age or older. This would indicate that if there were inaccuracies in the historical data, they were more prevalent among older students. While this is certainly possible, it is much more likely that the missing older students were returning Grade 12 students who did not return in 1994–95. Further support for this theory can be seen in Table 5-6 and Figure 5-6, which show that the largest drop in enrollment in diploma courses is in returning students.

Transfer of Students from the Alberta Education System to the Alberta Advanced Education and Career Development System and/or to Private Providers

Some of the drop in enrollment may be accounted for if students who were accessing courses through Alberta Education moved to programs delivered by either Alberta Advanced Education and Career Development or private providers. This indeed was the case in Edmonton, where the academic upgrading day program at Edmonton Continuing Education, which historically enrolled approximately 1 000 students, was dropped in the 1994–95 school year. Many students who would have enrolled in this day program likely turned to other providers: AVC Edmonton, Alberta College, or other private providers; and only Alberta College's enrollments would appear in the enrollment count of Alberta Education.

Section 6
Achievement-Over-Time Studies

An important goal of Alberta Education is to answer the question:

Has student achievement, as measured by the diploma examinations, changed over the past few years?

To answer this question, an "anchor test" technique is used.

Comparing achievement among groups of students requires some common measure. Because new diploma examinations are developed each year, it is not possible to make direct comparisons of achievement from one year to the next. Re-administration of old diploma examinations does not give an accurate indication of changes to student performance since students use old examinations for practice.

Machine-scorable anchor tests are designed and developed to be parallel to the machine-scorable components of each diploma examination. A set of common questions, having the same content and emphasis as the machine-scorable component of the diploma examination, is administered yearly to a sample of students registered to write the diploma examination. We refer to this set of common questions as an "anchor" test.

Table 6.1 presents the number of students who wrote the anchor tests each year. Only students with current school-awarded and diploma examination marks are included in the samples.

The questions from these anchor tests are not released to the public and are administered again in the anchor tests of subsequent years. Following the administration and scoring of the diploma examinations, a student's anchor test mark is matched with his or her machine-scored mark on a diploma examination.

Results from the anchor tests are compared between yearly administrations and are used to compare achievement on the machine-scorable components of the respective examinations.

In English, only the reading component, which is 50% of the student's examination mark, is compared using this method. A qualitative study, *Patterns and Processes: Approaches to Writing by Grade 12 Students* (1990), reviewed student written work in English 30, Social Studies 30, and English 33.

During the first year of the Achievement-Over-Time Studies, 1989, anchor tests were administered in English 30, English 33, and Social Studies 30. Anchor tests were not administered in Mathematics 30, Biology 30, Chemistry 30, and Physics 30 until June 1990.

For Mathematics 30, no comparisons are made to results for 1991 or earlier because of changes made to the curriculum in 1991.

In 1995, the curriculum changed for Mathematics 30, Biology 30, Chemistry 30, and Physics 30. For each of these except Biology 30, an anchor test was constructed containing sufficient items from the old anchor and the new curriculum to bridge performance before 1995 to performance in 1995 and after. The curriculum change in Biology 30 did not permit this bridging.

Equating Procedure

To place the results of different tests on the same scale, all scores are

Table 6-1

Number of Students Writing the Anchor Tests

Course	1989	1990	1991	1992	1993	1994	1995
English 30	360	319	297	352	364	207	346
English 33	264	298	249	114	305	146	262
Social Studies 30	634	464	303	378	327	238	309
Biology 30	N/A	405	286	499	353	305	N/A
Chemistry 30	N/A	160	291	327	300	229	305
Physics 30	N/A	74	N/A	224	228	104	272
Mathematics 30	N/A	N/A	N/A	444	272	228	360

N/A — not applicable in this year. No anchor test was administered.

expressed in terms of the results from a baseline year. The baseline year is 1992. A statistical procedure called linear equating is used to equate the results from each diploma examination to the baseline.

The statistical procedure uses the anchor tests and takes into consideration the peculiarities of each sample, such as differing anchor test sample size and differing anchor test sample abilities. The equating procedure allows for the expression of students' scores as if the students had written the diploma examination in the baseline year. That is, by applying the formula derived for English 30 to the mark of a student who wrote the June 1995 English 30 Diploma Examination, it is possible to estimate the mark the student would have received if that student had written the June 1992 examination.

For Physics 30, only the multiple-choice component of diploma examinations was used to equate 1990 results to 1992 results.

Results

Table 6-2 and Figure 6-1 show the mean percentage scores equated to the 1992 scores for the machine-scored component of the diploma examinations. These scores can be used to compare the provincial achievement of each year with that of the baseline year. Differences are considered significant when the probability due to chance is equal to or less than 1% ($p = 0.01$).

Has achievement, as measured by the diploma examinations, changed over the past few years?

- In **English 30 and English 33,** there has been no significant change in the level of student achievement on the machine-scored component of the diploma examination since 1989.
- The 1993 and 1995 **Social Studies 30** results were significantly better than the results obtained in 1989 and 1990. The 1993 results were also better than the 1992 results.
- Due to curriculum changes, no comparisons with 1995 achievement in **Biology 30** are possible.
- In **Chemistry 30**, there have been no significant changes in achievement since 1990.
- In **Physics 30**, results for 1994 were found to be significantly lower than results for 1992, 1993, and 1995.
- In **Mathematics 30,** student achievement has shown significant improvement each year.

Table 6-2

Equated Average Percentage on the Machine-Scored Component of the Diploma Examinations

Course	1989	1990	1991	1992[1]	1993	1994	1995
English 30	68.5	68.1	68.2	67.5	69.3	69.4	70.0
English 33	64.2	64.7	63.7	64.2	64.8	67.1	65.8
Social Studies 30	63.8	64.4	66.4	65.4	68.2[2]	66.3	68.1[3]
Biology 30	N/A[4]	67.1	65.7	66.6	65.6	69.6[5]	N/A[4]
Chemistry 30	N/A[4]	68.7	65.4	67.5	66.7	65.5	65.7
Physics 30	N/A[4]	70.9	N/A[4]	70.5	68.9	60.5[6]	72.5
Mathematics 30	N/A[4]	N/A[4]	N/A[4]	62.0	65.3[7]	70.0[8]	73.5[9]

[1] Baseline year: actual percentage on machine-scored component of diploma examination.

[2] Equated mean is significantly larger than means for 1989, 1990, and 1992.

[3] Equated mean is significantly larger than means for 1989 and 1990.

[4] N/A indicates that the anchor tests were not administered or not applicable.

[5] Equated mean is significantly larger than means for 1991 and 1993.

[6] Equated mean is significantly smaller than means for 1992, 1993, and 1995.

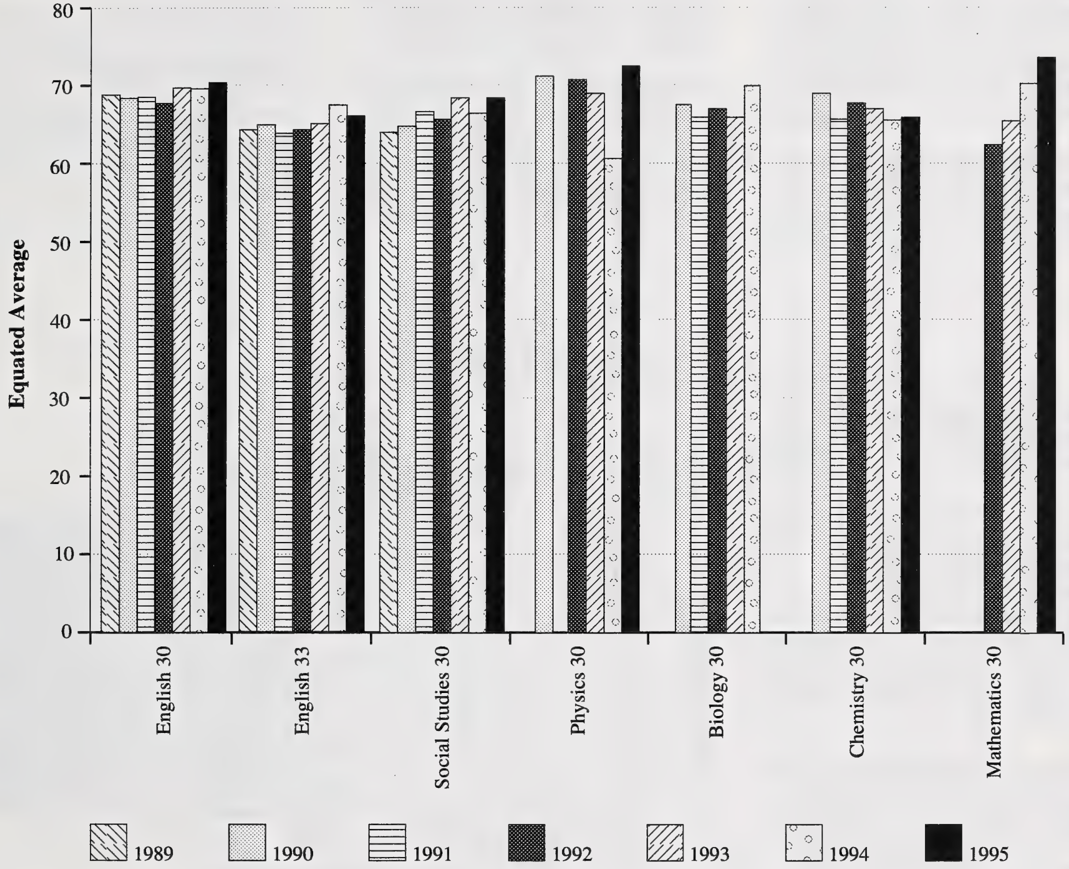
[7] Equated mean is significantly larger than mean for 1992.

[8] Equated mean is significantly larger than means for 1992 and 1993.

[9] Equated mean is significantly larger than means for 1992, 1993, and 1994.

Figure 6-1

Achievement-Over-Time on Diploma Examinations



Section 7

Examiners' Annual Summary Statements

This section of the report describes how well students met performance standards in the eight diploma examination courses. Each summary statement addresses three questions:

- What are the characteristics of the student population that wrote the examinations?
- What is the overall performance of students on the examinations?
- Do the population and performance data reveal any significant trends?

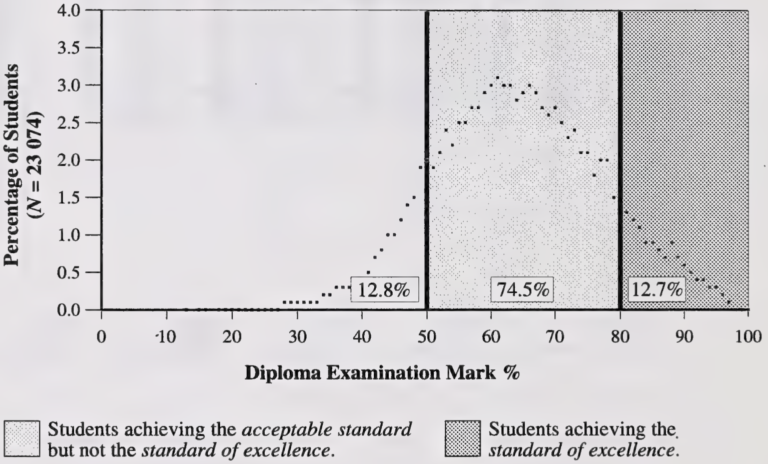
Consistent with most of the data presented in sections 3 through 6, the data in this section of the report are based only on the results of students who had both diploma examination and school-awarded marks.

Consequently, the figures provided here are slightly different from the figures on page 3, which describe a broader population.

English 30

Figure 7-1

English 30
Distribution of Diploma Examination Marks
1994–95 School Year



What are the characteristics of the student population that wrote the examinations?

In 1994–95, 23 074 students with corresponding school-awarded marks wrote the English 30 diploma examinations. This number, representing approximately 67% of all students writing English 30 or English 33 Diploma examinations in 1994–95, has decreased by 1 420 (6%) students since 1993–94.

English 30 is a course "appropriate for students intending to pursue further academic studies" (*Senior High School Language Arts 1982 Curriculum Guide*, page 6). Participation data suggest that a high proportion of students expecting to graduate are attempting to keep their options open with regard to future academic study by enrolling in English 30.

The English 30 population comprises more females than males. About 55% of students writing the English 30 Diploma Examination are female; 45% are male.

In the last three years, about 10% of those writing English 30 were atypical in that they were either repeating English 30 or challenging English 30 (refer to Table 7-1). Special studies have shown that students who rewrite English 30 without instruction, usually do not improve their marks, while students who rewrite courses other than English score average mark increases of 5 to 10%. Students who choose to challenge the examination without classroom instruction usually pass the examination but often do not achieve marks high enough to gain entrance to further academic studies.

What is the overall performance of students on the examinations?

The overall performance of students writing the English 30 diploma examinations during 1994–95 was similar to that in previous years. However, in comparison with previous years, a higher proportion of students achieved diploma examination marks at or above the *standard of excellence*. Consistency of performance is reflected in achievement-over-time studies conducted over the past seven years (see Section 6).

In 1994–95, a significant proportion of the students writing English 30 (87.2%) attained diploma examination marks at or above the *acceptable standard*, and 12.7% attained diploma examination marks at or above the *standard of excellence* (see Figure 7-1). Although

12.8% did not achieve the *acceptable standard*, most of these students (10.4% of all students) attained marks ranging from 40% to 49%. Some of these students might achieve the *acceptable standard* if they were to receive further instruction.

Acceptable Standard

Students who achieved at or slightly above the *acceptable standard* on the Minor Assignment: Reader's Response to Literature were able to understand the reading selection presented in *Part A: Written Response* and were able to relate their personal responses to the selection to details from that selection. Their writing was generally organized effectively.

In responding to the Major Assignment, students achieving at or slightly above the *acceptable standard* presented a clear controlling idea that reflected a basic understanding of the chosen literary work, but not always an understanding of the author's purpose or the wider implications of the literature. That is, students located a character or characters who illustrated a quality suggested by the topic, but they usually did not explore what the author was saying through that character.

Students achieving at or slightly above the *acceptable standard* organized their writing in a mechanical or functional way, giving clear direction to the reader. Occasionally, however, these students simply recounted parts of the story. Students writing at this level usually used language in a correct, practical way to "get the job done" rather than to enhance the details that they were communicating or to illustrate ideas for the reader.

As in the past, students at this level continued to demonstrate some awareness of control of the stylistic choices and the conventions of written

Table 7-1

English 30 Diploma Examination

Five-Year Comparison by Population Percentage and Achievement Averages

Year	Subgroup	Grade 11 Students	Grade 12 Students	Atypical Exam Writers*	Transferred in From Outside the Province
1994–95 (*N*=23 338)	Percentage of Population Examination Average	2.1 61.7	84.6 65.0	8.6 59.0	4.7 60.2
1993–94	Percentage of Population Examination Average	1.5 60.4	83.4 63.7	10.0 58.7	5.1 58.8
1992–93	Percentage of Population Examination Average	1.7 60.8	82.7 63.5	10.1 58.5	5.4 58.5
1991–92	Percentage of Population Examination Average	1.6 61.9	82.8 64.3	9.7 59.2	5.9 59.9
1990–91	Percentage of Population Examination Average	1.3 60.4	81.1 62.9	9.1 59.3	5.9 60.5

*This group includes repeaters, individuals challenging the examinations, and students without a school-awarded mark.

Table 7-2

English 30

Five-Year Comparison of Selected Population and Achievement Indicators

	1990–91	**1991–92**	**1992–93**	**1993–94**	**1994–95**
Number of Students with a School-Awarded Mark	22 841	24 027	24 489	24 494	23 074
Male/Female Proportions (%)	45/55	45/55	45/55	45/55	45/55
Students Achieving *Acceptable Standard* on Diploma Exam (%)	90.6	89.0	87.9	87.2	87.2
Students Achieving *Standard of Excellence* on Diploma Exam(%)	9.39	10.9	9.6	10.4	12.7

language. While such problems as pronoun–antecedent agreement and subject–verb agreement did appear in the writing, more pervasive and serious were errors involving word usage and confusion of syntax. However, the fact that students with final course marks in the mid-range (60% to 70%) can and do produce some well-written sentences suggests that they have the potential to move from "acceptable" to "proficient" in their writing.

In responding to *Part B: Reading*, students who achieved at or slightly above the *acceptable standard* demonstrated that they were generally capable of effective close reading and of understanding difficult material, especially non-fiction. These students were often unsuccessful, however, on vocabulary and other complex questions requiring closer examination, recognition of contextual clues, and rereading of the passage.

Standard of Excellence

Students who achieved the *standard of excellence* on *Part A: Written Response* produced writing that displayed confidence in ideas, organization, and choice of language. Writing at this level reflected a sensitivity to the emotional tone of the reading selection and also reflected an appreciation of the importance of lively, concrete detail in personal responses. Often, there was a mature understanding of the significance of the topic in the greater scope of human endeavor.

In responding to the Major Assignment, students at this level of achievement demonstrated a perceptive understanding of literature. They were able to use the topic as a springboard to a focused, engaging, thorough examination of a chosen work of literature. Students who achieved the *standard of excellence* were confident but thoughtful in presenting their ideas and opinions. Their ability to use language effectively to enhance their expression also suggested confidence.

In responding to *Part B: Reading*, students achieving the *standard of excellence* demonstrated that they had highly developed skills in close reading. These students also achieved noticeably higher scores on questions requiring competence in vocabulary. Students at this level were successful at reading critically and responding precisely to complex literary works such as Shakespearean drama and poetry dense with imagery.

Do the population and performance data reveal any significant trends?

Table 7-2 provides a comparison over the last five years of selected population and performance indicators. The continual increase in numbers between 1990–91 and 1993–94 of students writing the diploma examination in English 30 ended in 1994–95. In 1994–95, 1 420 fewer students (5.8%) wrote English 30 than in 1993–94.

English 33

What are the characteristics of the student population that wrote the examinations?

In 1994–95, 11 613 students with corresponding school-awarded marks wrote English 33 diploma examinations. This is approximately 33% of all such students who wrote English 30 or English 33 diploma examinations in 1994–95. Generally, students who write English 33 write few (if any) other diploma examinations (see Figure 2-3).

English 33 is a course "appropriate for students intending to go to vocational school or to seek employment after leaving high school" (*Senior High School Language Arts 1982 Curriculum Guide*, page 6). The fact that so few English 33 students were enrolled in other diploma examination courses may indicate that these students did, indeed, plan to enter the workforce immediately upon graduation.

In 1994–95, as in previous years, English 33 was selected by more male students than female students (see Figure 3-1). Also, as can be seen in Table 7-3, atypical examination writers formed 11.3% of the total number of individuals who wrote English 33 diploma examinations in 1994–95 (*N* = 12 073). This proportion is much higher than that for other diploma examinations (for example, 5.2% in Social Studies 30) and suggests that many individuals who are writing English 33 diploma examinations are challenging the examination or are repeating. The overall achievement of atypical examination writers is higher than is the overall achievement for other groups shown in Table 7-3. Again, this is unusual for diploma examination courses in that the overall achievement of similar groups of atypical examination writers in other courses is, without exception, lower than for the other groups shown in the tables. (See Tables 7-1, 7-3, 7-5, 7-7, and 7-10.)

What is the overall performance of students on the examinations?

The overall performance of the 11 613 students with corresponding school-awarded marks who wrote the English 33 diploma examinations this past school year was generally satisfactory. In 1994–95, 86.1% of students writing English 33 attained diploma examination marks at or above the *acceptable standard*, and 5.1% attained diploma examination marks at or above the *standard of excellence* (see Figure 7-2). The proportion of students who did not achieve the *acceptable standard* was 13.9%, but 11.1% attained marks ranging from 40% to 49%. Only 2.8% of the students attained marks of 39% or lower.

Acceptable Standard

Students who achieved at or slightly above the *acceptable standard* were able to respond clearly and correctly to all three assignments in *Part A: Written Response*. They demonstrated a clear understanding of the reading selection in their responses to Section I: Personal Response to Literature, and they addressed the assignment in a conventional manner. These students discussed life experiences and themes from literature in perfunctory but acceptable ways.

Students achieving at or slightly above the *acceptable standard* provided satisfactory responses to Section II: Functional Writing. These students used the information provided in the assignment to fulfill their purposes sufficiently and were able to adopt an appropriate tone that demonstrated an awareness of audience. They were able to organize their work logically and clearly.

When responding to Section III: Response to Visual Communication, these students tended to interpret the photograph in conventional ways, using generalized observations for support. Students who just met the *acceptable standard* on *Part A: Written Response* provided few specific details in their writing. Writing skills demonstrated by these students were minimally acceptable.

In responding to *Part B: Reading*, students who achieved at or slightly above the *acceptable standard* were able to understand reading selections that were intended for a general audience. They were able to draw some inferences from context and to apply basic concepts such as metaphor and foreshadowing. However, these students had difficulty understanding and interpreting irony and other tonal qualities.

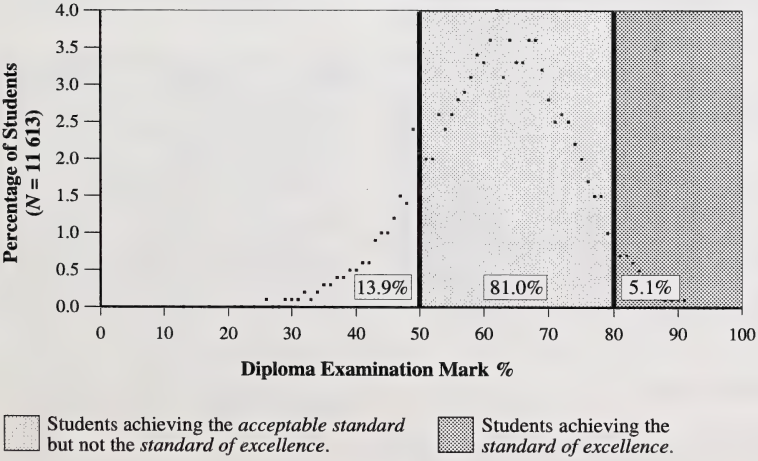
In responding to the revision assignments on *Part B: Reading* (students were required to make decisions about appropriate revisions to the draft of a letter), many students achieving at or slightly above the *acceptable standard* appeared to understand the rationale behind revisions in areas such as syntax, diction, and conventions. What was discouraging was that many of these students did not transfer this apparent understanding to their own writing on *Part A: Written Response.*

Standard of Excellence

Students who achieved the *standard of excellence* generally produced work of superior quality on all of the assignments in *Part A: Written Response*. When responding to Section I: Personal Response to Literature, students at this level usually interpreted the assignment in an insightful way. They presented significant themes or ideas and used precise examples from life and literature to support their themes. Many of these students responded to the universal implications of the selections and explored topics in a perceptive manner. These students used precise, thoughtfully chosen, and often imaginative details. They were able to select examples and illustrations from reading selections, from their own experience, and from other literature to fulfill their purpose. Their writing was focused, coherent, and smoothly developed. They used words and structures that were effective and basically free from errors. These students projected confidence in their writing.

Figure 7-2

English 33
Distribution of Diploma Examination Marks
1994–95 School Year



When responding to Section II: Functional Writing, students achieving the *standard of excellence* used an appropriate and engaging tone. They provided significant information that was enhanced by appropriate details. These students had a precise awareness of audience, and they provided important and essential information necessary for their purpose. Writing skills demonstrated at this level were relatively even; word choice and sentence structure were appropriate and often effective, and there were few errors in mechanics and grammar.

When responding to Section III: Response to Visual Communication, students achieving the *standard of excellence* presented insightful interpretations of the photograph, stating appropriate themes or ideas. Their ideas were typically extended and reinforced throughout their compositions. These students chose specific elements from the photograph to support their ideas. They made few mechanical or grammatical errors and produced relatively lengthy responses.

When responding to *Part B: Reading*, students achieving the *standard of excellence* demonstrated an understanding of relatively complicated literature. They were able to delve beyond the literal level of a work to make inferences from important features such as irony and symbolism. These students demonstrated that they carefully and thoughtfully read the selections and all parts of each question before answering.

Do the population and performance data reveal any significant trends?

Table 7-4 provides a comparison over the last five school years of selected population and performance indicators. The number of students writing English 33 diploma examinations continues to increase each year. The increase from 1990–91 to 1994–95 was 35.3%, and the increase since last year was 5.4%.

The proportion of male and female students writing the English 33 diploma examinations has remained relatively constant over the past five years, but this difference in proportion is unusual for diploma examination subjects (see Figure 3-1).

Proportions of students achieving the *acceptable standard* and the *standard of excellence* in English 33 declined between 1990–91 and 1993–94. As reported in the last issue of this report, however, and given that writing standards *increased* in English 33 in 1992–93 and again in 1993–94, this decline can be attributed to an increase in standards during this period rather than a decrease in the achievement of English 33 students. The increase in proportion of students achieving the acceptable standard between 1993–94 and 1994–95 bodes well, but it is too early to suggest that this increase is significant or that it indicates a "trend" (see Table 6-2). The low proportion of students achieving the standard of excellence in English 33 continues to be a concern and may indicate that few students taking this course are motivated to achieve high marks.

Table 7-3

English 33 Diploma Examination

Five-Year Comparison by Population Percentage and Achievement Averages

Year	Subgroup	Grade 11 Students	Grade 12 Students	Atypical Exam Writers*	Transferred in From Outside the Province
1994–95 (*N*=12 073)	Percentage of Population Examination Average	5.7 60.9	78.8 61.9	11.3 63.7	4.2 60.1
1993–94	Percentage of Population Examination Average	4.8 61.4	77.4 61.1	13.5 62.9	4.3 59.7
1992–93	Percentage of Population Examination Average	5.1 60.8	77.4 61.9	12.6 63.6	4.9 60.0
1991–92	Percentage of Population Examination Average	4.5 62.9	78.2 62.2	12.5 64.5	4.8 60.3
1990–91	Percentage of Population Examination Average	3.0 61.9	81.1 62.9	11.2 64.1	4.7 59.9

*This group includes repeaters, individuals challenging the examinations, and students without a school-awarded mark.

Table 7-4

English 33

Five-Year Comparison of Selected Population and Achievement Indicators

	1990–91	**1991–92**	**1992–93**	**1993–94**	**1994–95**
Number of Students with a School-Awarded Mark	8 586	9 254	9 939	11 020	11 613
Male/Female Proportions (%)	57/43	58/42	58/42	56/44	56/44
Students Achieving *Acceptable Standard* on Diploma Exam (%)	88.5	87.3	86.2	85.0	86.1
Students Achieving *Standard of Excellence* on Diploma Exam(%)	5.9	5.5	5.5	5.1	5.1

What are the characteristics of the student population that wrote the examinations?

In 1994–95, 19 745 students with corresponding school-awarded marks wrote the Social Studies 30 diploma examinations. Generally, students writing Social Studies 30 also wrote other diploma examinations (see Figure 2-3). There is also a high correlation (0.75) between Social Studies school-awarded marks and Social Studies 30 diploma examination marks (see Table 2-1).

Social Studies 30 is a course designed for those students who are seeking a diploma and who will likely pursue academic post-secondary studies. The fact that many Social Studies 30 students took other diploma examination courses may indicate that these students generally plan to enter post-secondary institutions upon graduation.

Social Studies 30 was selected by more female than male students. In 1994–95, 10 406 female students and 9 339 male students wrote the Social Studies 30 diploma examinations. Also, as can be seen in Table 7-5, the size of subgroup populations and their success on the Social Studies 30 diploma examinations have been relatively constant over the years. The group of atypical examination writers has, however, tended to perform below that of the other population subgroups.

What is the overall performance of students on the examinations?

The overall performance of the 19 745 students with corresponding school-awarded marks who wrote the Social Studies 30 diploma examinations was generally satisfactory. In 1994–95, 83.7% of the students writing Social Studies 30 attained diploma examination marks at or above the *acceptable standard,* and 15.7% of the students attained diploma examination marks at or above the *standard of excellence* (see Figure 7-3). The proportion of students who did not achieve the *acceptable standard* was 16.3%, but 12.1% of students attained marks ranging from 40% to 49%. The percentage of students whose marks were 39% or lower was 4.2%.

Acceptable Standard

In answering the multiple-choice questions in Part A of the examination, students who achieved at or slightly above the *acceptable standard* were able to recall and comprehend certain historical events or economic and political concepts. Students just meeting the *acceptable standard* experienced difficulty, however, with questions involving chronology, various critical thinking skills, and the application of knowledge to new or unfamiliar situations. In particular, these students experienced difficulty with textual or data-based questions (such as those involving a cartoon, graph, map, or series of quotations) that required them to see relationships, interpret trends, understand cause and effect, or identify stated or unstated assumptions.

Many students who just met the *acceptable standard* had difficulty dealing with the complexity of the task on *Part B: Written Response*. Typically, these students presented largely descriptive essays containing both relevant and irrelevant detail. Many students who just met or who fell short of the *acceptable standard* had difficulty applying and integrating concepts and defining the issues. They appear to have rushed headlong into their writing, without planning their essays and without considering the relevance of historical or contemporary examples associated with the issues under discussion.

Students who fell short of the *acceptable standard* often presented memorized information at random, rather than a thought-out discussion. They left the task of sorting out scattered facts to the reader. They presented popularly accepted versions of past or present events as unsupported, simple assertions. They often made little attempt to elaborate, explain, or develop ideas. Such writing received low scores.

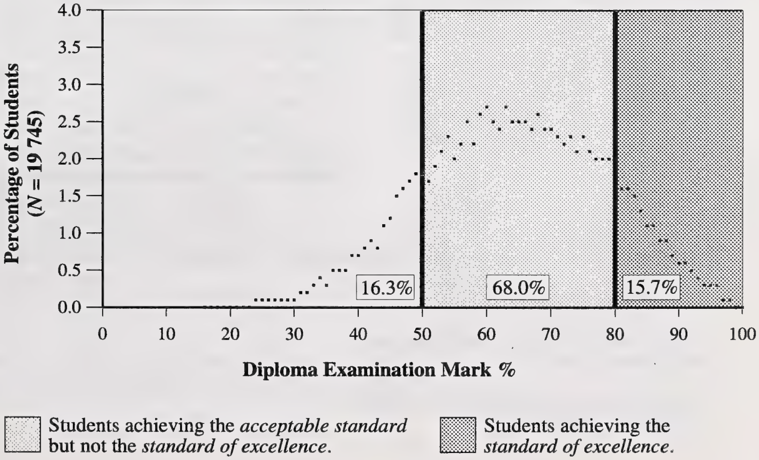
Standard of Excellence

In answering the multiple-choice questions in Part A, students achieving the *standard of excellence* demonstrated that they understood social studies concepts and comprehended historical, political, and economic relationships, many of which are very complex. They were consistently able to interpret and evaluate information and ideas, and to review, analyze, and synthesize specific information.

Students who achieved the *standard of excellence* often produced powerful and substantive writing in their

Figure 7-3

Social Studies 30
Distribution of Diploma Examination Marks
1994–95 School Year



responses to the assignment in *Part B: Written Response*. Given the complexity of the task and the constraints of time, some of these students' compositions were truly remarkable. Many of the responses of students achieving at this level revealed qualities of argument, support, development, and organization that exhibited a breadth of historical and contemporary knowledge. Students achieving the *standard of excellence* clearly showed ownership of the ideas they expressed; their writing revealed engaged minds thoughtfully immersed in issues relevant and meaningful to them. These students were comfortable in exploring ideas in their complexity.

Do the population and performance data reveal any significant trends?

Table 7-6 provides a comparison over the last five school years of selected population and performance indicators.

The number of students writing Social Studies 30 diploma examinations declined significantly from past administrations. Between 1993–94 and 1994–95, this decrease was 7.5%. The proportion of male and female students writing and the two performance indicators have remained relatively constant (see Table 7-6).

Although more females than males wrote the diploma examination in Social Studies, males continued to achieve higher averages than females: 65.8% compared with 62.0% in 1993–94, and 66.1% compared with 62.6% in 1994–95. On the multiple-choice component, in particular, males consistently achieve higher scores than females: 69.2% compared with 63.9% in 1994–95). This difference is not evident in the written response, where the averages in 1994–95 were 58.4% for males and 58.8% for females.

Student performance on the Social Studies 30 Diploma Examination is showing some improvement over performance in previous years. This observation is consistent with the evidence from Achievement Over Time Studies (see page 32). The proportion of students achieving the standards remain relatively constant. Revisions to the examination blueprint, beginning in 1990, have emphasized the demonstration of cognitively demanding critical-thinking skills in both the multiple-choice and written components of the examination. Given that standards have increased, it is encouraging that the proportions of students achieving standards have remained relatively consistent over the years.

Table 7-5

Social Studies 30 Diploma Examination

Five-Year Comparison by Population Percentage and Achievement Averages

Year	Subgroup	Grade 11 Students	Grade 12 Students	Atypical Exam Writers*	Transferred in From Outside the Province
1994–95 (*N*=19 856)	Percentage of Population Examination Average	2.0 60.9	88.9 64.4	5.1 57.7	4.0 63.7
1993–94	Percentage of Population Examination Average	2.3 63.6	87.1 63.6	6.1 57.2	4.5 62.3
1992–93	Percentage of Population Examination Average	1.8 60.5	88.0 62.1	5.7 60.0	4.4 61.1
1991–92	Percentage of Population Examination Average	2.1 60.5	87.5 62.6	5.4 55.8	5.0 61.3
1990–91	Percentage of Population Examination Average	1.2 61.6	89.4 64.4	4.3 58.4	5.1 63.3

*This group includes repeaters, individuals challenging the examination, and students without a school-awarded mark.

Table 7-6

Social Studies 30

Five-Year Comparison of Selected Population and Achievement Indicators

	1990–91	1991–92	1992–93	1993–94	1994–95
Number of Students with a School-Awarded Mark	20 168	20 804	21 098	21 351	19 745
Male/Female Proportions (%)	47/53	47/53	47/53	47/53	47/53
Students Achieving *Acceptable Standard* on Diploma Exam (%)	84.2	81.1	79.9	83.6	83.7
Students Achieving *Standard of Excellence* on Diploma Exam (%)	15.9	13.4	12.5	14.5	15.7

Français 30

What are the characteristics of the student population that wrote the examinations?

Français 30 is the final course of the Français 10-20-30 program designed for francophone students as defined in Section 23 of the *Canadian Charter of Rights and Freedoms*. Students enrolled in Français 30 are required to write the Français 30 Diploma Examination.

There were 88 regular school students who wrote the Français 30 Diploma Examination in the 1994–95 school year, eight of whom completed the course in the first semester and wrote the January 1995 examination. The other 80 were in full-year programs and wrote the examination in June 1995. Two mature students challenged the Français 30 examination in 1994–95 and 35 students from an Immersion Program also challenged the Français 30 Diploma examination in January 1995, for a total of 126 written examinations. Because very few students wrote at each examination administration, results must be interpreted with caution.

What is the overall performance of students on the examinations?

The overall performance of the 88 regular school students who wrote the Français 30 Diploma Examination in the 1994–95 school year was very good. All but one attained final course marks at or above the *acceptable standard*, and eight of them achieved the *standard of excellence*.

Students enrolled in Français 30 wrote an average of five diploma examinations, indicating that most of these students are hoping to receive the Advanced High School Diploma.

La Partie A: Production écrite

The written-response section of the Français 30 Diploma Examination required students to write two assignments related to a selection from a work of literature presented on the examination. The first assignment, "Premier Sujet," elicited a personal response to the selection. The second, "Deuxième Sujet," asked students to select a work of literature studied in their high school Français class and to relate it to a given theme inspired by the selection presented on the examination.

Students were able to understand the tone and content of the given literature and to respond clearly and effectively. For the personal response, they expressed their opinions and reactions with confidence. Most took the more obvious approach to the question by supporting the given theme, and a few were able to present an opposing view successfully. Examples taken from their own experiences or from general observations were generally appropriate and often interesting. Although the writing of students just meeting the *acceptable standard* was sometimes wordy and repetitious, markers clearly understood what they had to say. Students achieving the *standard of excellence* were able to present their ideas succinctly, directly, and emphatically.

In the second assignment, students had no difficulty selecting works that reflected the given theme. Students achieving the *standard of excellence* chose significant details from the literature to show how the given theme was developed by the author. Students just meeting the *acceptable standard* tended to choose more minor details or to repeat one significant detail, with less effect. All students, however, were able to convince the readers of the relationship between what they had read and what the assignment required. Students have learned well how to organize their ideas, how to choose effective vocabulary and structures, and generally how to follow conventions of language. It must be remembered that students are writing in a limited time under stressful conditions and that their work is considered a first draft. Under these conditions, what they achieved was impressive and often a pleasure to read.

La Partie B: Compréhension écrite

Part B: Reading Comprehension consisted of two booklets. The readings booklet contained two selections from non-fiction and three from fiction, one poem, and one piece of drama. The questions booklet contained 70 multiple-choice questions based on these readings. The questions were classified according to thinking skills.

Students' performance was generally satisfactory. They were able to identify and select, infer, interpret, and evaluate main ideas. They were also able to recognize the rapport between the author and the reader as well as discern values expressed. Students achieving the *standard of excellence* seemed better able to discern the nuances required to choose the right answer in some questions. Students achieving the *acceptable standard* did well on the questions requiring a literal understanding. These students should be encouraged to refer to the reading selections when contemplating their choice of answers. This could help them to perceive more of the nuances of the text.

Do the population and performance data reveal any significant trends?

We can make no comments on trends in the data because the number of students enrolled in the course is extremely small.

Mathematics 30

What are the characteristics of the student population that wrote the examinations?

Mathematics 30 is a course “designed for students with an interest and aptitude in mathematics, who are intending to pursue post-secondary studies at a university or in a mathematics-intensive program at a technical school or college.” (Senior High School Mathematics 10-20-30 Curriculum Guide, page 2)

In 1994–95, 19 270 students with corresponding school-awarded marks wrote the Mathematics 30 Diploma Examination. This is a decrease of 862 students since 1993–94. The Mathematics 30 population comprises slightly more females than males. About 50.2% of students writing Mathematics 30 Diploma Examinations were female; 49.8% were male.

What is the overall performance of students on the examinations?

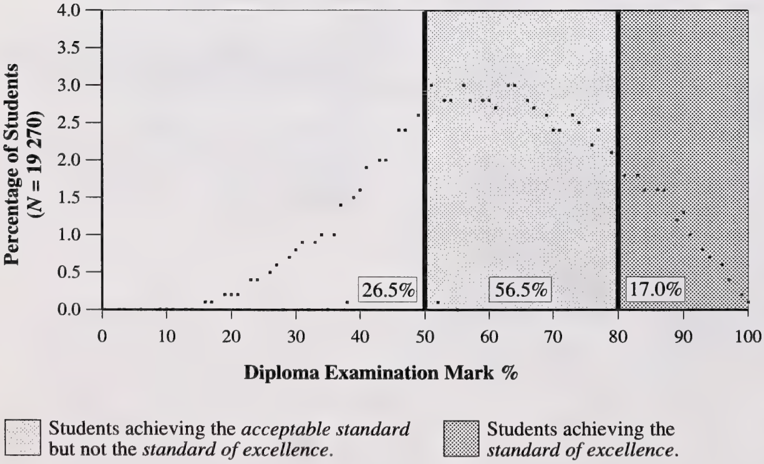
In 1994–95, 73.4% of the students writing Mathematics 30 attained diploma examination marks at or above the *acceptable standard*, which is 1.8% lower than in the 1993–94 school year. The percentage of students who achieved the *standard of excellence* rose slightly from 16.7% in 1993–94 to 17% in 1994–95 (See Figure 7.4). During the 1994–95 administrations, 26.5% of the students did not achieve the *acceptable standard*: an increase of 1.7% from the 1993–94 administration.

About 7% of the students who wrote the Mathematics 30 Diploma Examination were either challenging the examination or rewriting the examination. Regular non-mature students scored an average of 61.5% on the Mathematics 30 Diploma Examination, whereas regular non-mature students who rewrote the examination (school mark brought forward) scored an average of 69.5%. Regular mature school students scored an average of 55.9% on the Mathematics 30 Diploma examination, whereas regular school students who rewrote the examination (school mark brought forward) scored an average of 53.0%. Mature students who were challenging the examination scored an average of 44.4% on the examination.

Standards for the Mathematics 30 diploma examinations for the 1994–95 school year were published in the *Mathematics 30 Diploma Examination Information Bulletin*. The emphases on problem solving and communication skills in the Mathematics 30 curriculum were incorporated into the examination. On the examination, students were expected to describe mathematical situations, explain their solutions, write directions, explain their reasoning, create new problems, create new strategies, generalize a mathematical situation, and formulate hypotheses. The Mathematics 30 examiners’ reports outline the scoring criteria for these questions.

Figure 7-4

Mathematics 30
Distribution of Diploma Examination Marks
1994–95 School Year



Acceptable Standard

Students who achieved the *acceptable standard* of performance but not the *standard of excellence* (56.5%) were able to solve problems involving more than one step as long as the information provided was given in a “standard” form and could be referenced on the formula sheet. In trigonometry, for instance, students were able to solve a trigonometric identity when the information needed to solve the identity was given on the formula sheet. For the most part, students in this group were able to recognize relationships between mathematical concepts but only so long as these relationships were presented in a specific sense. Many were not able to identify the relationships in the general case. For example, these students were able to find the zeros of a polynomial, given its graph, and then were able to identify that there is a relationship between the multiplicities of the zeros of the polynomial and the degree of the polynomial, but they could not generalize the effect on the graph of the polynomial if the multiplicities of the zeros changed.

Students who did not achieve the *acceptable standard* of performance on the Mathematics 30 Diploma Examination (26.5%) had difficulty solving problems other than those that required solving for a single piece of information using a formula provided on the formula sheet. These students were able to solve problems that required a one-step translation, such as finding the value for sec θ, given cos θ. As a second example, these students were able to find the zeros of a polynomial, given its graph, but were not able to recognize that there is a relationship between the multiplicities of the zeros of the polynomial and the degree of the polynomial.

Standard of Excellence

Students who achieved the *standard of excellence* in Mathematics 30 (17.0%) had little difficulty solving any problems, regardless of the manner in which the material was presented and the number of steps required. For instance, students who achieved the *standard of excellence* were able to read information from equations that were presented in both "standard" and "non-standard" forms. Further, they recognized and were able to describe relationships between mathematical concepts in both the specific and the general cases. For example, these students were able to find the zeros of a polynomial, given its graph, and then were able to identify that there is a relationship between the multiplicities of the zeros of the polynomial and the degree of the polynomial. They could then discuss this polynomial in the general case; for instance, how the graph of the polynomial would change if the multiplicity of the zero changed.

Students who achieved the *standard of excellence* were able to relate one concept to another and were able to apply concepts in unfamiliar situations.

Do the population and performance data reveal any significant trends?

For the sixth year in a row, approximately 30% of the students who wrote the examination in June did not meet the *acceptable standard.*

Many students who are enrolled in Mathematics 30 continue to have difficulty relating an algebraic expression to a graphical representation. For instance, students may be able to solve a trigonometric equation but cannot relate the meaning of the solution to the graph of the trigonometric function.

Communication skills in mathematics are improving. Students are willing to attempt to explain mathematical procedures or concepts. During the 1994–95 school year, students were required to show how well they communicate mathematical ideas and concepts and approaches to solving problems. On the written-response section of the diploma examinations, students are expected to show all of the steps in solving a problem, explain their approach to solving the problem, and solve the problem. The explanation can occur in many ways, algebraically if the student clearly defines variables, in written form, or through the use of diagrams.

Although students have been exposed to many different mathematical concepts throughout their study of mathematics, it is interesting to note that many of them rely on previously learned mathematics ideas when it comes to solving problems, rather than the mathematics used in Mathematics 30. Results from the Achievement Over Time Mathematics 30 examination show significant improvement from 1992–95 (see Table 6-2).

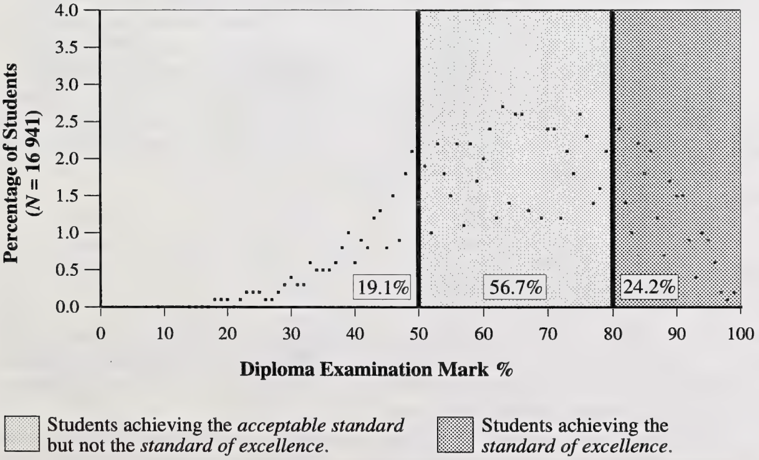
Biology 30

What are the characteristics of the student population that wrote the examinations?

In 1994–95, 16 941 students with corresponding school-awarded marks wrote the Biology 30 diploma examinations. This represents a decrease of 5.6% compared with 1993–94. This decrease can be partially accounted for in that approximately 1 600 students wrote the Science 30 Year-End Examination and that the number of students who wrote the Chemistry 30 and Physics 30 diploma examinations increased slightly (by 1.7% and 3.1% respectively). Science 30 is a newly introduced course and 1994–95 was its first year. These changes decreased the number of students registering in Biology 30 and, therefore, writing the Biology 30 diploma examinations. When the number of students writing the English 30 and 33 diploma examinations is used to represent the Grade 12 population, an overall decrease in Grade 12 students of 2.3% from 1993–94 (35 514) to 1994–95 (34 687) is noted. The decrease in the biology student population can also be partially accounted for by the changing demographics of the high school population.

Figure 7-5

Biology 30
Distribution of Diploma Examination Marks
1994–95 School Year



Approximately 56% of the Biology 30 population in 1994–95 completed four or more diploma examination courses. Compared with Mathematics 30, Chemistry 30, and Physics 30, Biology 30 has the lowest proportion of students who write four or more diploma examinations courses during a school year. Notwithstanding, Biology 30 is primarily intended for students intending to pursue post-secondary studies.

The Biology 30 population comprises more females than males. About 59% of students writing Biology 30 Diploma Examinations are female; 41% are male.

What is the overall performance of students on the examinations?

The overall performance of students who wrote the Biology 30 diploma examinations during the 1994–95 school year was very similar to performance in the previous year. This is reflected in the examination average (65.6%) and in the proportion of students (80.9%) who achieved the *acceptable standard*. A significant proportion of students (24.2%) achieved the *standard of excellence*. Although 19.1% of the students did not meet the *acceptable standard*, 7.1% of all students obtained marks ranging from 45% through 49%. Most of these students would be able to achieve the *acceptable standard* on future diploma examinations in Biology 30 if they received additional instruction.

The percentage of female and male students who achieved the *acceptable standard* on the Biology 30 diploma examinations was the same—80.9%. The percentage of females who achieved the *standard of excellence* on the Biology 30 diploma examinations was 24.1, compared with 24.4 of males. The Biology 30 diploma examinations average for females and males was the same—65.6%.

As in the previous four years, the group that attained the highest examination average (see Table 7-7) wrote Biology 30 diploma examinations while in their second year of high school. This group likely contains a high proportion of students who plan to take additional 30-level science courses in their third year of high school.

Acceptable Standard

Students who attained the *acceptable standard* but not the standard of excellence (56.7% of the population) understood most of the basic functions of reproductive systems, differentiation, and development. They recalled some properties of key biological substances (hormones) and therefore selected correct physiological functions for these substances. This group of students correctly interpreted data presented in simple graphs, tables, and diagrams. However, they found it difficult to interpret complex graphs and tables that presented interrelated sets of data. They related biology concepts to simple human experiences but found it difficult to analyze multistep molecular and population genetics problems. Questions that required the understanding of biology concepts within the context of technology (how technology extended knowledge of cells or components of cells) proved difficult. The basic language of biology was understood by these students, but specialized terms that incorporate sophisticated science concepts (negative feedback, genetic engineering, reabsorption, hypothesis) created problems for them. The students in this group composed one- or two-sentence answers that were clear and logical for questions that contained only one component. However, they had difficulty creating multistep paragraph responses to problems that required developing several ideas. Their answers to these questions frequently consisted of recalled information that did not address the central issues of the problems posed. These students did not clearly express cause-and-effect relationships.

Students who failed to achieve the *acceptable standard* (19.1% of the population) did not understand basic functions of the nervous, endocrine, and reproductive structures. They found it difficult to interpret data represented in diagrams and tables. They did not know the functional properties of key biological substances. They were unable to make predictions based on simple principles of inheritance and to sequentially organize the major steps of physiological processes. This group of students could not compose clear and logical explanations for single-component problems. Their responses indicated that they did not adequately understand the meaning of the questions.

Table 7-7

Biology 30 Diploma Examination
Five-Year Comparison by Population Percentage and Achievement Averages

Year	Subgroup	2nd Year of High School	3rd Year of High School	4th Year of High School*	Transferred in From Outside the Province
1994–95	Percentage of Population	7.9	83.8	4.5	3.8
	Examination Average	72.6	65.2	55.6	63.4
1993–94	Percentage of Population	4.3	84.4	7.1	4.2
	Examination Average	71.7	65.3	59.0	65.5
1992–93	Percentage of Population	10.2	79.5	6.3	4.0
	Examination Average	69.4	64.6	59.4	64.3
1991–92	Percentage of Population	11.2	78.8	5.7	4.3
	Examination Average	67.5	62.6	56.6	63.3
1990–91	Percentage of Population	9.1	81.1	5.2	4.6
	Examination Average	69.5	63.5	58.9	65.2

*This group includes repeaters, individuals challenging the examinations, and students without a school-awarded mark.

Table 7-8

Biology 30
Five-Year Comparison of Selected
Population and Achievement Indicators

	1990–91	1991–92	1992–93	1993–94	1994–95
Number of Students	19 167	20 313	21 604	17 943	16 941
Female/Male Proportions (%)	59/41	58/42	58/42	58/42	59/41
Students Achieving *Acceptable Standard* on Diploma Exam (%)	77.7	76.5	81.6	81.4	80.9
Students Achieving *Standard of Excellence* on Diploma Exam (%)	22.3	20.5	22.1	23.2	24.2

Standard of Excellence

Students who attained the *standard of excellence* (24.2% of the population) demonstrated consistent performance throughout the examination, whether they selected or created responses. They could recall precise knowledge about the structure and function of human organs; about the mechanisms of inheritance; and about populations. They could then use this knowledge to solve multistep problems. They were able to understand the chemical and neural pathways of communications, to understand all aspects of reproduction and genetics, and to arrange physiological processes in sequential order. They could perform calculations in molecular genetics, and in population genetics and dynamics. They could form hypotheses based on initial data and then evaluate them in the light of new data. They could evaluate experimental designs and explain why the results could or could not be used to support certain decisions. Their compositions demonstrated a clear understanding of cause-and-effect relationships. They used scientific vocabulary with precision and communicated clearly.

Do the population and performance data reveal any significant trends?

From the 1992–93 to the 1994–95 school year, the total number of students who obtained a final course mark in Biology 30 decreased from 21 926 to 17 007, and, hence, in all population subgroups. The number of Grade 11 (2nd year of high school) students showed a large decrease in 1993–94, from 2 243 to 785, because of the implementation of the new Biology 20 course. Since the former Biology 30 course was not congruous with the new Biology 20 course, the majority of Grade 11 students waited until their Grade 12 year to enroll in Biology 30; thus causing a change in population size. In 1994–95 the number of Grade 11 students increased to 1 348, but this still represents a decrease from 1992–93.

The percentage of the population of each subgroup shows some changes as well. Over the five-year period, the proportion of Grade 12 (3rd year of high school) students appears to be slightly increasing, whereas that of Grade 12 (4th year of high school) and of transferred-in students appears to be slightly decreasing (see Table 7-7).

From 1990–91 through 1994–95, the created-response section of the Biology 30 examinations changed in that increasing emphasis was placed on solving problems that were set in authentic science research contexts. Students were expected to solve these problems by using scientific process skills and by relating their understanding of science concepts to technological and societal issues. In keeping with these changes, the individual items were reduced in number (from 7 to 2), but each item was increased in its breadth. The diploma examinations as a whole still remained accessible to the group of students who achieve at the *acceptable level* as well as to those students who achieve at the *level of excellence*. In fact, the percentage of students in both these categories increased during the past two school years (see Table 7-8).

The proportion of females and males who obtain Biology 30 diploma examination marks has changed very little during the past four school years. However, the proportion of females who achieved the *acceptable standard* in Biology 30 from 1990–91 to 1994–95 increased by approximately 4.6%; while the proportion of males who achieved the *acceptable standard* for this same period increased by 1.3%.

Chemistry 30

What are the characteristics of the student population that wrote the examinations?

In the 1994–95 school year, almost the same number of students (14 669) with corresponding school-awarded marks wrote the Chemistry 30 diploma examinations as in 1993–94. The writing population represents almost one-half of the students who wrote either the English 30 or English 33 diploma examinations. This number appears to meet the expected size of the target group. Not all students capable of achieving the *acceptable standard* or the *standard of excellence* were enrolled in chemistry. For example, some students who were successful in Physics 30 did not take Chemistry 30. Since these students are likely to be successful in the chemistry program, they could be encouraged to enroll.

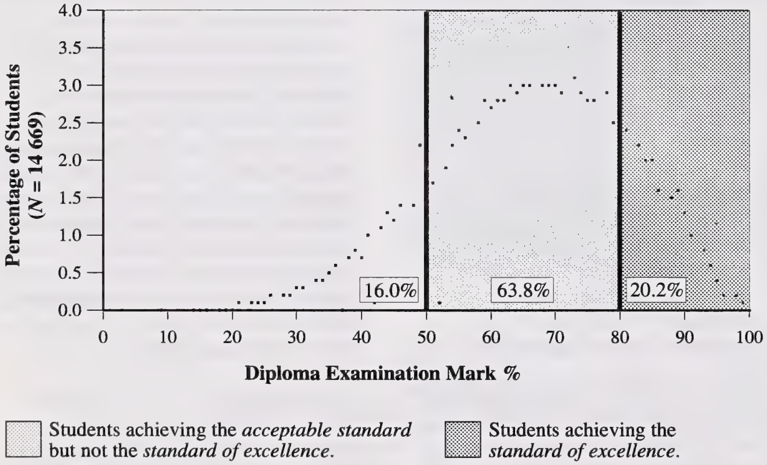
What is the overall performance of students on the examinations?

The overall performance of students who wrote the Chemistry 30 diploma examinations during the 1994–95 school year was satisfactory (see Figure 7-6). In 1994–95, 84.0% of the students writing Chemistry 30 attained diploma examination marks at or above the acceptable standard, which is up from 77.7% last year. Care should be taken when making these comparisons since the previous year's students were the last group of students taking the old program, and this year's group is the first group of students to write a diploma examination based upon the new curriculum. A significant proportion of the students, 20.2%, attained diploma examination marks at or above the *standard of excellence* (see Figure 7-6). This percentage is slightly lower than the 22.9% of the students who achieved the *standard of excellence* last year. Once again, caution should be exercised in drawing conclusions from these figures since different curricula are involved. As in previous years, many of the students (7.6%) attained marks ranging from 44% to 49%. These students could achieve a pass with further instruction.

The percentage of female students who achieved the *acceptable standard* on the Chemistry 30 diploma examination was 83.8%, compared with 84.3% of male students. The percentage of females who achieved the *standard of excellence* on the examinations was 18.2%, compared with 22.3% of male students. The average for females on the Chemistry 30 examinations was 65.1%, compared with 66.3% for males. These proportions may be explained, in part, by the higher participation rate of females in this subject. One would have expected the participation rate to be the same as the normal gender distribution at that age, 51/49—male/female proportion in percentages. Since more females than males select this course, they likely represent a wider ability range within the Grade 12 populations. Another potential explanation may lie in the attractiveness to males of the technological curricular emphasis in the revised course.

Figure 7-6

Chemistry 30
Distribution of Diploma Examination Marks
1994–95 School Year



Acceptable Standard

Students who achieved the *acceptable standard* but not the *standard of excellence* (63.8% of the population) were able to do stoichiometry of more than one step as long as it did not involve writing and balancing equations for chemical reactions. They were able to calculate the amount of energy required to warm a given mass of water; the concentration of an acid, given the concentration and volume of the titrant; and the volume of acid, provided that the ratio between the sample and titrant was 1:1. They were able to assign oxidation numbers to most atoms and were capable of balancing chemical reactions using half-reactions. These students could

Table 7-9

Chemistry 30
Five-Year Comparison of Selected Population and Achievement Indicators

	1990–91	1991–92	1992–93	1993–94	1994–95
Number of Students	15 312	16 156	16 865	14 798	14 669
Male/Female Proportions (%)	48/52	48/52	48/52	48/52	48/52
Students Achieving *Acceptable Standard* on Diploma Examination (%)	81.5	83.0	81.6	79.6	84.0
Students Achieving *Standard of Excellence* on Diploma Examination (%)	22.8	22.5	21.1	22.9	20.2

transpose data to and from graphical form and had a good grasp of essential definitions and terms such as conjugate base, Arrhenius acid, pH, and exothermic–endothermic. They had little if any difficulty in adapting to the new examination design and question formats presented to them on the 1995 series of diploma examinations. They successfully ranked species on the basis of their properties, ranked reactions on the basis of the magnitude of the energy involved, and were able to use and extract pertinent information from the data booklet. However, they had difficulty in recognizing ratios other than 1:1 in acid–base chemistry and in solving complex stoichiometric problems. They usually recognized the correctness of a situation for most concepts, but had difficulty applying these concepts in unfamiliar contexts. They were weak in relating concepts to real-life circumstances. These students were usually able to organize their creative responses in an understandable fashion, though they had difficulty with communication conventions, such as spelling, significant digits and, especially, SI prefixes.

These individuals worked best at the macroscopic level and, as a result, did well on the multiple-choice questions. Students who did not achieve the *acceptable standard* of performance on the Chemistry 30 Diploma Examination (16.0%) had difficulty in solving stoichiometric problems other than those involving a single-step addition/subtraction problem, such as calculating the voltage of a cell given the half-reactions and determining the hydronium ion concentration given the pH. These students were unable to transfer data to or from graphical form and to use data to predict trends, patterns, or properties. They also had difficulty in predicting chemical changes and writing appropriate chemical equations for the changes involved. In general, these students had difficulty in creating their responses and communicating their ideas clearly. As a result, they did not do well on the created-response (numerical and written) section of the examinations. They did, however, recognize correct statements about essential concepts and had their greatest success on the multiple-choice section of the examinations.

Standard of Excellence

Students who achieved the *standard of excellence* (20.2%) were able to solve any stoichiometric problem and to recognize ratios other than 1:1 in acid–base chemistry. They also recognized relationships between the dissolved solute and the resulting species and, as a result, were able to accurately predict physical and chemical properties of solutions. They had no difficulty in distinguishing between strength and concentration, nor did they have difficulty in inferring properties from graphical data. They were able to recognize when a reaction would or would not occur and thus did not always assume that a reaction is forthcoming when two or more reagents are combined. They did have difficulty in dealing with comparisons based upon logarithmic functions and involving practical applications. They also had difficulty determining K_b and other values that required the use of principles related to equilibrium. In general, they were able to apply their knowledge in new and novel situations and, as a result, were very successful in creating responses. The new question formats and design of the examination did not appear to provide them with any difficulties nor did they have great difficulty in relating concepts learned in the classroom to real-life applications. These students had no difficulty in organizing and communicating their responses. They did well on all sections of the examination, and their work on the created-response sections was as expected.

Table 7-10

Chemistry 30 Diploma Examination

Five-Year Comparison by Population Percentage and Achievement Averages

Year	Subgroup	Grade 11 Students	Grade 12 Students	Atypical Exam Writers*	Transferred in From Outside the Province
1994–95	Percentage of Population	6.3	86.4	3.0	4.3
	Examination Average	68.2	65.5	57.6	66.3
1993–94	Percentage of Population	3.5	86.8	4.7	5.0
	Examination Average	70.2	63.4	56.6	65.9
1992–93	Percentage of Population	8.0	82.7	4.4	4.9
	Examination Average	67.8	64.3	57.7	66.1
1991–92	Percentage of Population	8.5	82.5	4.0	5.0
	Examination Average	68.7	64.5	58.1	68.2
1990–91	Percentage of Population	7.0	83.6	4.2	5.2
	Examination Average	69.9	64.5	58.5	67.9

*This group includes repeaters, individuals challenging the examination, and students without a school-awarded mark.

Do the population and performance data reveal any significant trends?

As expected, the previously identified trend of significant Grade 11 student participation was re-established this year. The number of Grade 11 students increased significantly, from 3.5% of the population to 6.3%. The Grade 11 student achievement in Chemistry 30 continued to be strong, with 27.5% of these students attaining the *standard of excellence* and 59.8% attaining the *acceptable standard* but not the standard of excellence. This high success is partially due to the International Baccalaureate Chemistry program where some students in the second year of the program (Grade 11) write the Chemistry 30 diploma examinations. It is expected that the number of Grade 11 students that enroll in Chemistry 30 will return to the pre-pilot level of around 8% in 1995–96.

The achievement of atypical students and out-of-province students continued to decrease relative to that of Grade 12 students.

Curricularly, there was no significant improvement or decline in two of the three content areas common to the old and the revised curricula. There appears to be improvement in the acid–base content area. This may be due to the mandatory inclusion of equilibrium into the program of studies. Student performance on concepts directly related to equilibrium concepts is not as great as one should expect.

Physics 30

What are the characteristics of the student population that wrote the examinations?

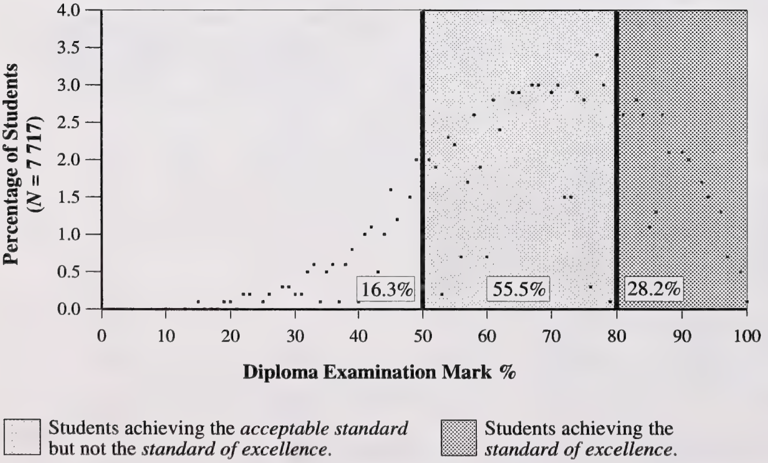
In 1994–95, 7 717 students with corresponding school-awarded marks wrote the Physics 30 diploma examinations. This represents an increase of 229 students from the 1993–94 school year. This increase is a result of the number of Grade 11 students (229) writing the Physics 30 examination now that the new curriculum has been completely implemented. The participation rate in Physics 30 consisted of 63.2% male students (4 877) and 36.8% female students (2 840). Compared with 1993–94, the participation rate for males and females has remained relatively constant.

As shown in Figure 2-3, Physics 30 students write, on average, 4.4 different diploma examinations. Only students writing Français 30 write more.

Physics 30 continues to be a course designed for students going on to academic and technological post-secondary physics-science-related programs. Registration in Physics 30 should continue to be encouraged, as many career opportunities require the knowledge and skills supported by the high school physics program.

Figure 7-7

Physics 30
Distribution of Diploma Examination Marks
1994–95 School Year



What is the overall performance of students on the examinations?

The overall performance of students writing the Physics 30 diploma examinations during the 1994–95 school year was satisfactory (see Figure 7-7). Although actual diploma results were consistent with the performance in previous years (Table 7-11), slightly fewer students achieved the *standard of excellence* than in 1993–94. The proportion of students with diploma examination marks at or above the *standard of excellence* was 28.2%. This represents a decrease of 4.1% from the results in the previous year. The proportion of students that failed to achieve the *acceptable standard* was 16.3%, compared with the previous year's proportion of 15.2%.

Acceptable Standard

In 1994–95, students who achieved the *acceptable standard* but not the *standard of excellence* (55.5%) could reliably state and solve those problems that could be related quickly to an equation in the data booklet. Also, students demonstrated some success in solving simple two-step problems. For this group, laboratory skills were limited to using laboratory data to verify known physics information. These students were capable of producing a graph from raw data, calculating quantities such as momentum, energy, voltages, stopping voltages, centripetal force, and distances travelled by electromagnetic waves. They tended to use item-specific methods in their problem solving, and rarely used the major generalizations of physics, such as Newton's laws or those of the conservation of energy or charge. In addition, students had difficulty communicating, for example, their method of solving a problem. Thus, students performing near the *acceptable standard* showed only limited understanding of the full scope of the Physics 30 program of studies. Within this restricted range of content, such students performed well.

In addition, students with final course marks near the *acceptable standard* used the data booklet supplied more as a crutch than as a summary of the physics content. Those who achieved this standard showed that they could use the equations and information provided to solve problems requiring single-step calculations and simple two-step calculations. They were also competent in recalling facts and essential definitions related to specific concepts. Many students found it difficult to translate definitions into alternative forms and to judge whether a data book value was valid within the range of values given in a particular problem. These students had difficulty identifying the relationship between two variables that had been expressed in a graphical representation. Students achieving at this standard found it difficult to make predictions based on information or data presented. They found the multiple-choice section far easier than the written-response section and typically scored 30% higher on this section of the exam.

Standard of Excellence

Students achieving the *standard of excellence* (28.2%) showed far more flexibility and creativity than those achieving the *acceptable standard* but not the *standard of excellence*. They used general methods of solution and were not afraid to use conservation laws to solve unusual problems. They illustrated a transference of knowledge from one area of physics to another and expressed their answers clearly and concisely. They made inferences that were not part of their "known" area of physics. These students were able to use generalizations of physics and to distinguish between vectors and scalars or forces and fields.

In 1994–95, students with final course marks near the *standard of excellence* tended to use the data booklet to support their problem-solving strategies, but were not overly dependent upon it. These students stated and easily recognized relationships between variables. They were able to derive equations as needed, design procedures for a laboratory activity, and communicate effectively the procedures used to arrive at a solution. Those who achieved just below this standard had some difficulty with questions that required multistep solutions, and they needed explicit cues before they were able to use a wider range of problem-solving strategies. In many cases, such students solved more complex problems in the multiple-choice format but experienced difficulty with similar concepts tested in a written-response format. They were adept at selecting the correct response in the multiple-choice section, and in creating their own responses for similar questions in the numerical-response and written-response sections. When confronted with a problem requiring the use of two or more steps, they created their own procedures for solving problems. Many of their responses to the written-response questions showed a high level of sophistication.

Do the population and performance data reveal any significant trends?

Based on the actual results of students writing the Physics 30 diploma examinations, achievement has been fairly consistent (Table 7-11). Students continue to do well on the multiple-choice section of the examinations and continue to improve on the numerical-response section. In the written-response section, there continues to be a decrease in the number of students who leave questions blank.

Table 7-11

Physics 30
Five-Year Comparison of Selected Population and Achievement Indicators

	1990–91	1991–92	1992–93	1993–94	1994–1995
Number of Students	7 736	8 196	8 458	7 488	7 717
Male/Female Proportions (%)	66/34	65/35	64/36	64/36	63/37
Students Achieving *Acceptable Standard* on Diploma Examination (%)	83.1	81.4	81.5	84.8	83.8
Students Achieving *Standard of Excellence* on Diploma Examination (%)	23.0	22.6	26.6	32.3	28.2

Achievement has shown improvement in some specific areas. Students have shown a marked increase in their ability to solve problems involving routine calculations. They perform well on problems requiring single-step or two-step calculations but continue to have major difficulties using ratios. A second area that shows improvement is in their understanding that electrons can be accelerated to high speeds when in the presence of an intense electric field, and that when the electrons stop suddenly and release a photon, the photon's energy is equivalent to the energy of the accelerating electron just before it stops. Students are still somewhat confused between electric and magnetic fields, and in their understanding of the movement of charges when explaining induction and conduction. However, students continue to show strength in problems requiring them to present their data graphically and in the use of graphical analysis.

The percentage of females writing Physics 30 diploma examinations has increased since 1990–91 but very slowly. In addition, females have consistently achieved a slightly higher average on diploma exams in the past. This trend continued in 1994–95 and is supported by a greater percentage of females now achieving the *acceptable standard* and the *standard of excellence* than males.

Appendix A
Diploma Examination Development Process

The staff of the Student Evaluation Branch give great care and attention to the development and marking of all diploma examinations to ensure that students' marks on diploma examinations are fair and equitable measures of their achievement.

Professional staff of the Student Evaluation Branch work with many individuals in the complex process of developing diploma examinations. Classroom teachers, school and jurisdiction administrators, representatives from post-secondary institutions, and staff of the Curriculum Standards Branch and Language Services Branch are all involved.

It takes approximately 18 months to complete the development of a diploma examination. The examination development process follows these steps:

- Planning
- Approving Examination Blueprints
- Developing Examination Questions
- Constructing and Administering Field Tests
- Analysing and Revising Questions
- Constructing the Examinations
- Approving the Examinations
- Printing and Administering the Examinations
- Marking the Examinations
- Analysing and Reporting the Results

The procedures outlined below have been revised for the 1994–95 school year.

Planning

The first step in the planning phase is to prepare (under direction from the Curriculum Standards Branch) specifications based on the goals and objectives of the curriculum for each subject.

Examination developers in each diploma examination course then prepare an interim examination blueprint. An examination blueprint is an overall plan used to guide the development of an examination. If a diploma examination is undergoing extensive revision because of curricular change, or if a new examination is to be developed, an advisory committee of teachers and subject consultants will contribute to decisions about the emphasis and design of the examination.

As blueprints are drafted and examinations designed, examination developers and advisory committees must address these questions:

- What knowledge and skills can students be expected to possess?
- How can the various parts of the curriculum best be tested?
- What should be the weighting for each part of the curriculum tested?
- How long and how demanding should the examination be?
- What format will produce the most valid results?
- What types of questions will be most valid and reliable? (Multiple choice, short answer, extended written response?)
- How should the examination be organized to produce valid and reliable results?
- How will students' responses be scored? What will the criteria be for scoring?
- How should the results be reported?
- Who will receive the results?

To ensure that each examination is a fair and equitable measure of students' accomplishments in the course, and to ensure that results will be meaningful and reliable, examination developers incorporate curricular as well as statistical standards into the examination design.

Examination questions are developed to reflect the range of expectations for students' achievement that is embedded in the curriculum. Each question is classified and cross-referenced to the curriculum in terms of the specified knowledge, skills, and understanding the question is designed to assess. The range of difficulty embedded in the curriculum dictates the range of difficulty of examination questions.

Field testing confirms and validates the curricular expectations as reflected by the questions. Item analysis of the machine-scorable field tested questions provides technical data about the relative difficulty of questions and about the technical strength of sets of questions. Field-tested questions are kept for use on a diploma examination or are refield-tested to ensure that they meet appropriate technical and curricular standards, or such questions are discarded.

Approving Examination Blueprints

When examination developers and their advisory committees have developed an examination design and blueprint, including criteria for scoring written responses, a committee of Alberta Education staff (Regional Offices of Alberta Education, the Curriculum Standards Branch, Language Services Branch, and the Student Evaluation Branch) review the proposed design. The blueprint and design the committee recommends is then reviewed by an Examination Advisory Committee consisting of representatives nominated by the Alberta Teachers' Association, the Conference of Alberta School Superintendents, the Universities Co-ordinating Council, the Public Colleges of Alberta, Alberta Education, and representatives from business, industry, and other professional organizations and non-government agencies. This committee makes recommendations regarding the final examination design to the Director of the Student Evaluation Branch.

Developing Examination Questions

Following approval of the examination design, format, and blueprints, examination developers plan for question development. On the recommendations of superintendents, classroom teachers from across the province are selected to work on question development committees chaired by examination developers from the Student Evaluation Branch.

Professional examination development staff of the Student Evaluation Branch ensure that teachers serving on question development committees understand the technical principles of question construction. The teacher committees develop questions that meet the curricular and technical standards incorporated in the examination design and blueprints, and that will fairly test the skills and concepts that students can be expected to have acquired.

Questions developed in committee are then carefully screened, edited, and revised so that all blueprint requirements and technical standards are met. At this point, copyright approval is sought for testing materials such as literary selections, cartoons, graphs, maps, charts, and data sets.

Constructing and Administering Field Tests

Examination developers at the Student Evaluation Branch construct field tests containing questions developed by teacher committees. Each field test is carefully edited and revised to ensure technical and curricular validity and faithfulness to the examination blueprint. School jurisdiction personnel grant permission for the administration of field tests to students in their systems in January and/or June of each school year.

Based on the geographic and demographic variables expected for the total population that will write a given diploma examination, the Student Evaluation Branch field-testing administration staff selects a minimum sample of 250 students to write each field test. Field tests are administered only to students who are nearing completion of the diploma examination subject being tested so that their performances on the field test will be predictive of the performances of students writing the diploma examination.

Student Evaluation Branch professional staff members administer the field tests under secured examination conditions. This procedure allows examination developers to receive first-hand information from teachers and students about examination questions and formats. As well, the procedure ensures test security and uniform administration conditions so that statistical results can be considered reliable.

Teachers whose classes participate in field testing comment on:

- level of difficulty of questions
- curricular validity
- appropriateness of questions, data sets, reading selections, format
- problems with questions, stimulus material, art work
- clarity of instructions
- correspondence between questions and the way in which a concept is taught

Students are also encouraged to discuss the field test with the field test administrator.

All of the data from field testing—statistical and anecdotal—provide the examination developer with accurate and first-hand information that is used to ensure that the final form of each diploma examination is a valid and reliable measure of students' achievement.

Analysing and Revising Questions

Examination developers carefully analyse the statistical results and teacher comments for each field test to determine the need for additional field testing. Individual questions or question sets requiring changes are revised and submitted for further field testing. If changes are not feasible, questions are discarded.

Questions and question sets that prove successful in field testing are considered for inclusion in a diploma examination.

Constructing the Examinations

The diploma examinations are composed of questions and/or question sets that have proven to be valid in field testing. For each diploma subject, parallel examinations are developed annually for administration in January, June, and August. Additional administrations are also scheduled depending upon need and resources. The examinations are designed to be parallel in form and equivalent in difficulty. Each examination is constructed according to the approved blueprint (i.e., each will have approximately the same number of questions testing a particular facet of the curriculum as specified by the blueprint). An information bulletin outlining the design, format, and marking criteria for each diploma examination subject is distributed to schools at the beginning of each school year. The information bulletins include changes from previous years' examinations, and scoring guides.

Approving the Examinations

Once a final form of a diploma examination is drafted, it receives editing, proofreading, and technical checking. The examination developers from the Student Evaluation Branch present the final form of each examination to an Alberta Education committee that gives the examination a thorough technical review.

The recommendations of the Alberta Education committee are incorporated into any additional revisions that are necessary.

The Examination Advisory Committee also meets each administration to review the results of the past year's examinations and to advise on policy issues that affect the design, development, and administration of the examinations and the reporting and interpretation of the results.

Printing and Administering the Examinations

Following the Director's approval of the final form of a diploma examination, examination developers ensure completion of additional quality checks that include editing, proofreading, validating of correct answers by a teacher committee, checking print quality of art work and illustrations, confirming precise match to the blueprint, and completing a final estimate of difficulty for each question.

Each examination is printed and then distributed to schools just before the administration dates.

Schools are responsible for ensuring the security of examinations before administration and for ensuring that examinations are administered according to regulations. Each school receives extra copies of the January and June examinations for use in the school.

Diploma examinations are scheduled annually in January, June, and August, and are conducted according to examination regulations. Additional administrations of examinations in selected courses are also scheduled. Schedules and regulations are published in the *General Information Bulletin* that is distributed to schools each fall.

The August examinations and additional examinations are confidential and therefore remain secured.

Students identified as having learning and/or physical disabilities may apply for special provisions for examination writing. Special provisions include brailled examinations, large-print examinations, tape-recorded examinations, additional writing time, use of a word processor, use of a tape recorder for responses, and use of a sign language translator. The complete policy for special provisions is printed in the *General Information Bulletin* and is available on request from the Student Evaluation Branch (telephone 403-427-0010). Following administration, completed examinations are shipped (in accordance with security regulations) to Alberta Education in Edmonton for processing and marking.

Marking the Examinations

Markers for the written-response parts of the examinations are teachers nominated by their superintendents and selected on a proportional basis so that the percentage of markers selected from a geographic area is comparable to the percentage of papers from that area. To be selected for marking, a teacher must be currently teaching the subject he or she wishes to mark, must have taught the course for at least two years, and must possess a valid Alberta Permanent Professional teaching certificate.

Selected classroom teachers are trained in the marking procedures and are supervised during the marking session by the professional staff from the Student Evaluation Branch.

The written-response parts of the diploma examinations are all marked centrally. All student and school identification is removed from the papers before the marking so that markers have no means of knowing the source of a paper. Multiple-choice responses are computer-scored.

Analysing and Reporting the Results

The statistical results of each examination are carefully analysed. The Examination Advisory Committee may be asked to review the results as well. Reports of local results in each subject are prepared for all school jurisdictions.

Individual student results are mailed about one month after the date on which the examinations were administered. Students who are dissatisfied with their results in any subject may request that their examination in that subject be rescored. The fee for rescoring, including GST, is $26.75 per examination. The mark awarded after the rescoring supersedes the initial mark.

For more information, call the Assistant Director of Examination Development for Language Arts and Social Studies or the Assistant Director of Examination Development for Mathematics and Sciences at 403-427-0010.

Appendix B

Guidelines for Interpreting and Using the Results of the Diploma Examinations

Purpose of the Reports

The jurisdiction and school reports describe the results achieved by students who wrote diploma examinations in this administration and who had a school-awarded mark. If requested by the superintendent, similar reports for instructional groups in the school are also provided.

Alberta Education, school authorities, and schools are responsible for ensuring that the highest possible quality of education is provided for students. The results from provincial assessments allow the government, provincial officials, school board members, superintendents, principals, teachers, school councils, parents and community members to examine results in relation to provincial goals and standards. Results from diploma examinations provide information which can help identify areas of strength, areas needing improvement, and the progress being made toward the achievement of goals. The careful interpretation of results from diploma examinations informs decisions about how to improve student learning.

As noted in the Guide for Developing School Board Three-Year Education Plans and Annual Education Reports, reporting on the results achieved is one of the keys to establishing processes that lead to continuous improvements to education.

Diploma examination results provide only part of the overall picture of the province's, a school jurisdiction's, or a school's performance. Although provincial assessments are designed to assess the achievement of provincial standards as reflected in the Program of Studies, many important learning outcomes cannot be measured by time-limited, paper-and-pencil tests. In addition, many factors contribute to student achievement. The analysis, interpretation, use and communication of results from diploma examinations need to take these factors into account.

The school and jurisdiction are in the best position to accurately interpret, use and communicate diploma examination results as they pertain to the school or jurisdiction. Wherever possible, information about a school's or jurisdiction's results should be obtained from the school or jurisdiction.

Considerations

1. Each school authority, in collaboration with its community, is expected to use the results from diploma examinations for its jurisdiction together with data from other performance measures to plan improvements in performance of the school jurisdiction. The school authority is expected to report annually to the parents and taxpayers in the jurisdiction the results for the jurisdiction on provincial assessments, including the local context and the limitations of the assessments. (See *Guide for Developing School Board Three-Year Education Plans and Annual Education Reports* for complete requirements for planning and reporting.)

2. The school principal and teachers, in collaboration with parents and the community, are expected to use their school results on diploma examinations together with data from other performance measures to plan improvements in the performance of the students. They are expected to report annually to the parents of students in the school, the school council and to taxpayers in the school's community the school's results on provincial assessments, including the local context and the limitations of the assessments.

3. Results on provincial assessments for individual students and for groups of students of fewer than five shall not be publicly released. Although parents, community members, and taxpayers have the right to know how well schools, school jurisdictions, and the province are performing, the right to privacy of the individual student must be ensured. When there are few students writing a diploma examination at one administration, consideration should be given to reporting annual results only. Annual results together with results for the last four years are provided by Alberta Education.

4. Results from provincial assessments can assist teachers in their assessment of their own instructional practice and can assist others in the review of a teacher's instructional practice; however, results from provincial assessments shall not be used as the sole basis for evaluating teacher performance. The performance of students on provincial assessments is the result of several years in school and other variables and cannot be solely attributed to one teacher.

5. School jurisdiction and school results on provincial assessments should be communicated together with provincial results and standards, all of the other measures which provide indications of a school's or a jurisdiction's performance, local goals, the contexts for learning, and plans for improvement.

6. When comparisons are made against provincial standards and results, interpretations should take into account local goals, contexts and plans.

7. Interpreting and communicating the results for small groups of students should be done in the awareness that the trends for small groups of students can be greatly influenced by the scores of one or two students. Instructional Group Reports for fewer than 5 students are not provided.

8. The analysis, interpretation, use, and communication of results on diploma examinations should consider the limitations of provincial assessments and adhere to the *Principles of Fair Student Assessment Practices for Education in Canada.*

9. School-awarded marks and diploma examination marks are complementary measures. School-awarded marks should reflect all aspects of learning in a course, including those which cannot be measured by time-limited, paper-and-pencil tests. Although differences can be expected between a student's school-awarded mark and that student's diploma examination mark in a course, large differences between school-awarded marks and diploma examination results for groups of students should be investigated. Final course mark distributions cannot be directly compared to school-awarded mark distributions or to diploma examination mark distributions, as the final mark is not independent of the other two marks.

10. Factors affecting student selection of diploma examination courses vary from school to school. These factors should be considered when comparing school or jurisidiction results with provincial results. The participation rates provided annually as part of the annual roll-up report should be used when interpreting or communicating the diploma examination results.

11. Some information about changes in student performance on diploma examinations from year to year can be derived by comparing the local percentage of students achieving standards to the provincial results in each of the years of interest. Direct comparision of percentages of students meeting standards or averages for a school or jurisdiction from year to year does not provide reliable information on changes in student performance. Changes in curriculum and standards over time affect the results. The diploma examinations are designed to be parallel in a given year but not necessarily across years.

School Factors Which Affect Student Achievement

Research in education has identified key aspects of school effectiveness which affect student achievement.

1. Productive School Climate and Culture
    - there is a shared and articulated focus on achievement
    - there is a shared belief that all students can achieve
    - staff is cohesive, collaborates, and makes decisions by consensus

2. Focus on Student Acquisition of Central Learning Skills
    - teachers know what students are to learn and emphasize mastery of key concepts
    - students know what is expected of them
    - learning time is maximized

3. Appropriate Monitoring of Student Progress
    - student progress is monitored, reported, and used for planning improvements
    - students can show what they have learned
    - parents know what their child has achieved

4. Outstanding Leadership
    - effective instructional leadership is provided

5. Parent Involvement
    - high levels of school and home cooperation are evident

6 Effective Instruction
- grouping and organizational arrangements are appropriate
- pacing is appropriate
- curriculum and learning are aligned
- teachers use a variety of strategies
- students are actively involved

7. High Expectations and Requirements for Students
    - students are held responsible for learning
    - higher-order learning is emphasized

Many other factors can be considered in interpreting results and planning for improved learning. These include students' abilities, attitudes, motivations, aspirations, academic backgrounds, and learning styles. They also include students' family circumstances, socio-economic backgrounds and community environments.

A Systematic Approach for the Effective Use of Diploma Examination Results

The interpretation and analysis of diploma examinations should be a collaborative effort which can involve teachers, students, parents and the community. A systematic use of diploma examination results might include the following steps:

1. Comparing test results for a school or instructional group with the provincial results. Be sure that your comparisons include the:
    - total test score
    - total on machine-scored and written-response questions
    - subscale scores for machine-scored and written-response questions
    - individual machine-scored and written-response question results
    - differences between school-awarded and diploma examination marks
    - participation rates in each course.

2. Noting any patterns, anomalies and/or interrelationships in the results.

3. Hypothesizing relationships between your observations and the factors that have an effect on achievement.

4. Developing and implementing a plan to improve the quality of education for students.

5. Developing and implementing a communication plan to share results and what the school is planning to do to improve student learning.

References

Use and Reporting of Results on Provincial Assessments, Alberta Education Policy 2.2.3

Freedom of Information and Protection of Privacy Act

Principles of Fair Student Assessment Practices for Education in Canada. University of Alberta, Edmonton, AB.

Haertel, G. D. et al. (1990) "What Influences Learning? A Content Analysis of Review Literature" *The Journal of Educational Research*, Vol. 84(1), 30-43

Levine, D. U. & Lezotte, L. W. (1990) *Unusually Effective Schools* (National Center for Effective Schools Research & Development, Madison, WI.)

Guide for Developing School Board Three-Year Education Plans and Annual Education Reports. February 29, 1996. Alberta Education.

March 18, 1996

Appendix C
Percentage Distribution of Marks in Diploma Examination Courses

Diploma Examination Course	January 1995*			*January 1994 Final Course Mark*
	School-Awarded Mark	**Diploma Examination Mark**		
ENGLISH 30			***N*** **= 10 147**	***N*** **= 10 613**
A (80-100%)	16.8	10.3	**11.2**	11.0
B (65-79%)	42.9	32.9	**40.0**	42.2
C (50-64%)	33.4	41.1	**42.8**	41.9
F (0-49%)	6.9	15.7	**6.0**	4.9
Mean	66.8	62.5	**65.1**	65.6
Standard Deviation	12.4	13.0	**11.4**	11.0
ENGLISH 33			***N*** **= 5 179**	***N*** **= 4 900**
A (80-100%)	5.7	4.4	**3.2**	4.3
B (65-79%)	35.1	37.6	**36.8**	38.3
C (50-64%)	46.5	44.8	**53.4**	49.8
F (0-49%)	12.7	13.2	**6.6**	7.6
Mean	61.2	61.9	**62.0**	62.4
Standard Deviation	11.8	10.8	**9.5**	10.1
FRANÇAIS 30†			***N*** **= 8**	***N*** **= 14**
A (80-100%)	n/a	n/a	**n/a**	n/a
B (65-79%)	n/a	n/a	**n/a**	n/a
C (50-64%)	n/a	n/a	**n/a**	n/a
F (0-49%)	n/a	n/a	**n/a**	n/a
Mean	n/a	n/a	**n/a**	n/a
Standard Deviation	n/a	n/a	**n/a**	n/a
SOCIAL STUDIES 30			***N*** **= 8 398**	***N*** **= 8 925**
A (80-100%)	18.6	15.1	**15.4**	13.2
B (65-79%)	40.8	33.8	**38.5**	37.3
C (50-64%)	35.4	33.2	**39.4**	42.2
F (0-49%)	5.2	17.9	**6.7**	7.3
Mean	67.4	63.7	**65.9**	65.1
Standard Deviation	12.1	14.4	**12.4**	12.1

** The figures may change slightly as a result of appeals of school-awarded marks, rereads of diploma examinations, or special cases considerations.*

† The January 1995 results for Français 30 are not reported because only 8 students received final course marks.

(continued)

Percentage Distribution of Marks in Diploma Examination Courses

	January 1995*			
Diploma Examination Course	**School-Awarded Mark**	**Diploma Examination Mark**	**Final Course Mark**	*January 1994 Final Course Mark*
MATHEMATICS 30			***N*** **= 10 420**	***N*** **= 10 585**
A (80-100%)	26.9	13.1	**17.6**	17.8
B (65-79%)	34.0	24.8	**31.6**	33.5
C (50-64%)	30.7	32.7	**36.8**	37.2
F (0-49%)	8.4	29.4	**14.0**	11.5
Mean	68.7	59.3	**64.3**	65.1
Standard Deviation	14.5	16.6	**14.8**	14.2
BIOLOGY 30			***N*** **= 7 762**	***N*** **= 8 539**
A (80-100%)	23.9	18.5	**19.9**	22.5
B (65-79%)	37.5	31.2	**35.6**	34.6
C (50-64%)	31.2	30.0	**35.2**	33.5
F (0-49%)	7.4	20.3	**9.3**	9.4
Mean	68.2	63.7	**66.4**	67.2
Standard Deviation	13.4	16.0	**13.9**	14.2
CHEMISTRY 30			***N*** **= 6 750**	***N*** **= 7 097**
A (80-100%)	26.2	21.1	**22.2**	21.1
B (65-79%)	35.6	34.6	**36.9**	33.8
C (50-64%)	30.7	29.2	**33.2**	33.9
F (0-49%)	7.5	15.1	**7.7**	11.2
Mean	68.7	66.1	**67.8**	66.3
Standard Deviation	13.9	15.2	**13.7**	14.6
PHYSICS 30			***N*** **= 2 809**	***N*** **= 3 086**
A (80-100%)	27.9	18.3	**20.0**	29.5
B (65-79%)	38.3	30.3	**37.3**	38.5
C (50-64%)	28.2	28.4	**34.1**	26.0
F (0-49%)	5.6	23.0	**8.6**	6.0
Mean	70.0	63.3	**67.0**	70.6
Standard Deviation	13.3	16.4	**13.9**	13.7

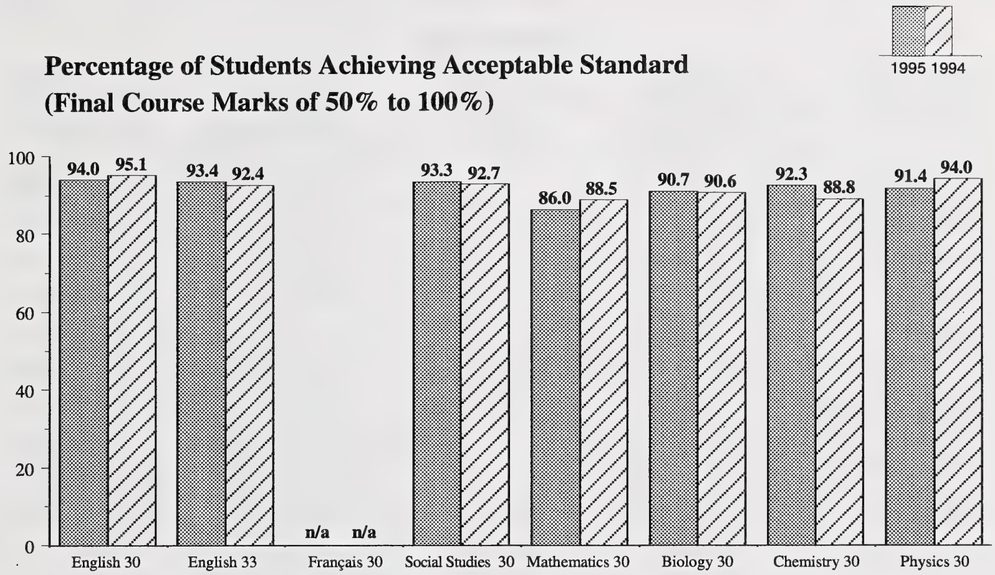
---

* *The figures may change slightly as a result of appeals of school-awarded marks, rereads of diploma examinations, or special cases considerations.*

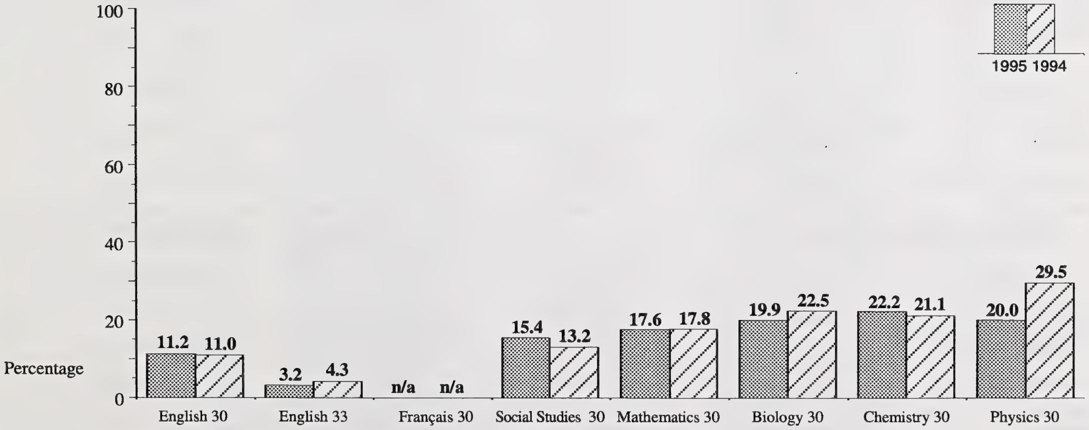
Diploma Examination Courses
Final Course Marks

January 1995 and January 1994

Percentage of Students Achieving Acceptable Standard (Final Course Marks of 50% to 100%)



Percentage of Students Achieving Standard of Excellence (Final Course Marks of 80% to 100%)



Percentage Distribution of Marks in Diploma Examination Courses

	June 1995*			
Diploma Examination Course	**School-Awarded Mark**	**Diploma Examination Mark**	**Final Course Mark**	*June 1994 Final Course Mark*
ENGLISH 30			***N* = 13 558**	***N* = 14 526**
A (80-100%)	19.8	13.6	**14.3**	11.5
B (65-79%)	42.1	35.9	**41.5**	39.5
C (50-64%)	31.2	37.2	**39.1**	43.2
F (0-49%)	6.9	13.3	**5.1**	5.8
Mean	67.6	64.5	**66.4**	65.2
Standard Deviation	12.8	13.3	**11.8**	11.4
ENGLISH 33			***N* = 6 465**	***N* = 6 161**
A (80-100%)	5.3	5.5	**3.5**	2.8
B (65-79%)	33.0	36.0	**34.6**	33.1
C (50-64%)	46.6	42.3	**52.9**	55.2
F (0-49%)	15.1	16.2	**9.0**	8.9
Mean	60.1	61.4	**61.3**	60.9
Standard Deviation	12.2	11.8	**10.1**	9.8
FRANÇAIS 30			***N* = 80**	***N* = 75**
A (80-100%)	15.0	6.3	**7.5**	16.0
B (65-79%)	54.9	40.0	**48.7**	50.6
C (50-64%)	28.8	46.2	**42.5**	30.7
F (0-49%)	1.3	7.5	**1.3**	2.7
Mean	69.5	62.7	**66.4**	68.5
Standard Deviation	10.2	10.6	**9.6**	11.6
SOCIAL STUDIES 30			***N* = 11 158**	***N* = 12 325**
A (80-100%)	22.8	15.5	**17.4**	16.8
B (65-79%)	38.8	32.9	**36.7**	37.7
C (50-64%)	32.8	34.1	**39.2**	38.7
F (0-49%)	5.6	17.5	**6.7**	6.8
Mean	68.4	63.8	**66.4**	66.3
Standard Deviation	12.7	14.5	**12.7**	12.6

---

* *The figures may change slightly as a result of appeals of school-awarded marks, rereads of diploma examinations, or special cases considerations.*

(continued)

Percentage Distribution of Marks in Diploma Examination Courses

	June 1995*			
Diploma Examination Course	**School-Awarded Mark**	**Diploma Examination Mark**	**Final Course Mark**	*June 1994 Final Course Mark*
MATHEMATICS 30			***N* = 9 831**	***N* = 10 533**
A (80-100%)	24.5	17.4	**19.2**	17.1
B (65-79%)	33.3	22.1	**28.7**	30.2
C (50-64%)	31.5	30.6	**36.3**	38.2
F (0-49%)	10.7	29.9	**15.9**	14.5
Mean	67.4	60.0	**64.0**	63.9
Standard Deviation	15.1	18.4	**15.9**	15.1
BIOLOGY 30			***N* = 9 366**	***N* = 9 513**
A (80-100%)	27.9	27.6	**26.4**	22.2
B (65-79%)	35.2	28.3	**32.5**	31.9
C (50-64%)	29.7	23.6	**31.0**	34.0
F (0-49%)	7.2	20.5	**10.1**	11.9
Mean	69.2	66.1	**68.0**	66.2
Standard Deviation	13.8	17.8	**15.0**	14.9
CHEMISTRY 30			***N* = 8 106**	***N* = 7 701**
A (80-100%)	27.8	18.4	**21.4**	23.9
B (65-79%)	35.6	33.6	**37.0**	32.9
C (50-64%)	27.6	29.6	**31.7**	30.7
F (0-49%)	9.0	18.4	**9.9**	12.5
Mean	69.0	64.4	**67.0**	66.8
Standard Deviation	14.6	15.6	**14.3**	15.5
PHYSICS 30			***N* = 4 925**	***N* = 4 499**
A (80-100%)	34.9	32.7	**32.0**	32.1
B (65-79%)	37.7	30.3	**36.2**	33.2
C (50-64%)	21.6	23.3	**25.5**	26.5
F (0-49%)	5.8	13.7	**6.3**	8.2
Mean	72.1	69.3	**71.0**	70.4
Standard Deviation	13.8	16.9	**14.4**	15.3

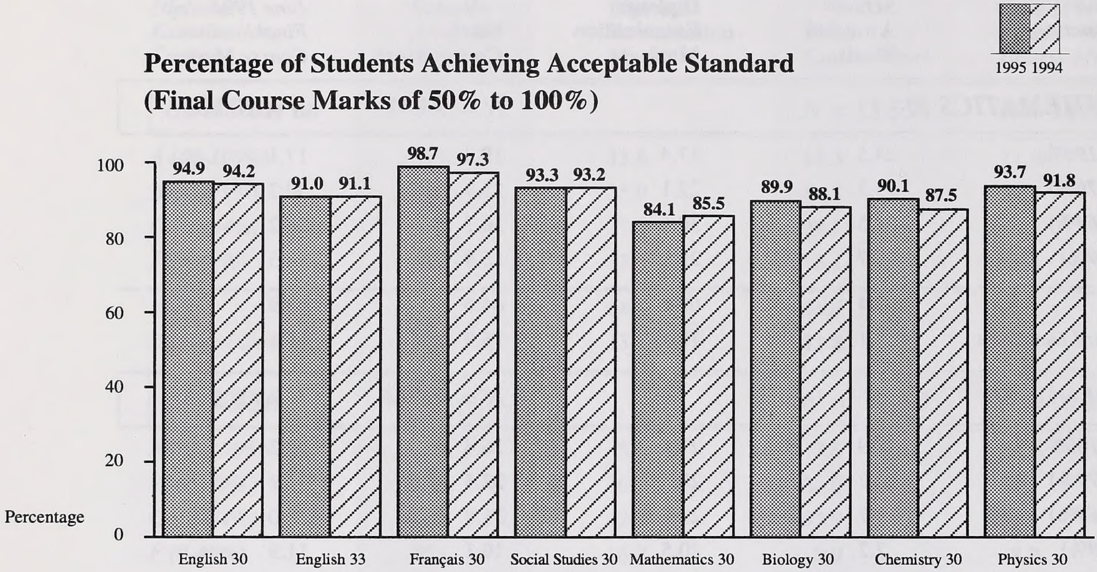
---

* *The figures may change slightly as a result of appeals of school-awarded marks, rereads of diploma examinations, or special cases considerations.*

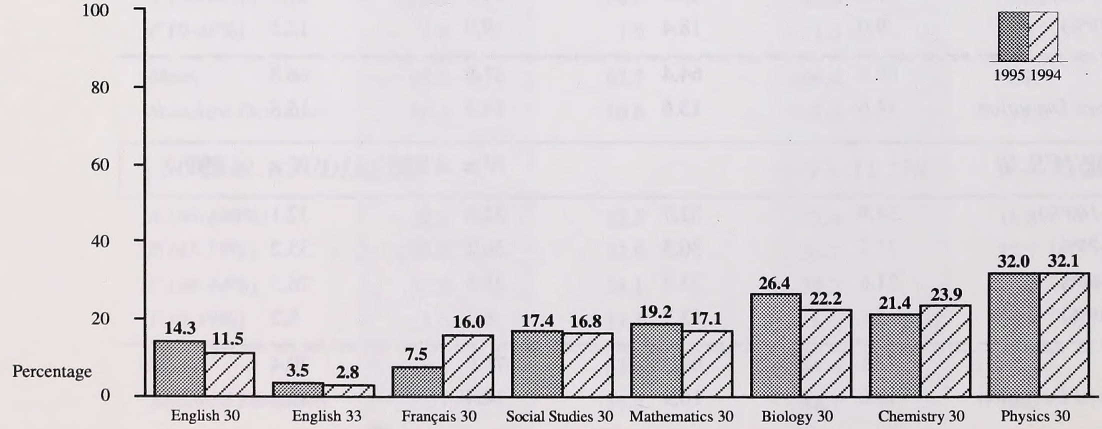
Diploma Examination Courses Final Course Marks

June 1995 and June 1994

Percentage of Students Achieving Acceptable Standard (Final Course Marks of 50% to 100%)



Percentage of Students Achieving Standard of Excellence (Final Course Marks of 80% to 100%)



JUN 3 0 2000

B49333

University of Alberta Library
0 1620 1134 9105